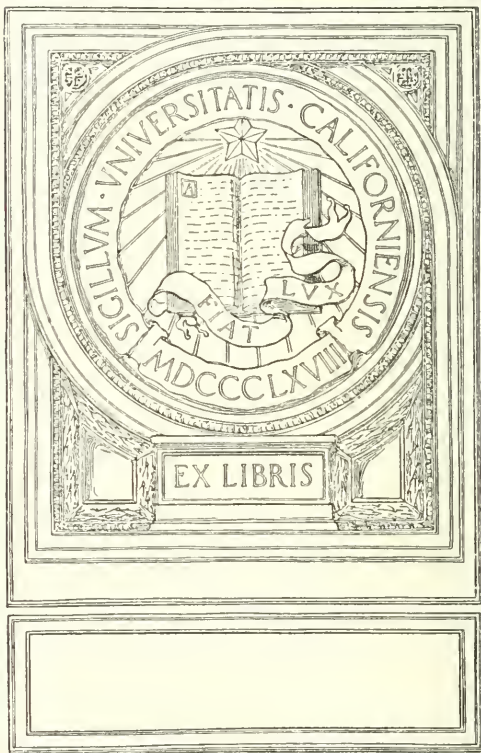



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THE
ADOLESCENT PERIOD

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BY THE SAME AUTHOR

THE
HYGIENE OF THE NURSERY

INCLUDING THE GENERAL REGIMEN AND FEEDING OF
INFANTS AND CHILDREN AND THE DOMESTIC MAN-
AGEMENT OF THE ORDINARY EMERGENCIES OF
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all interested in the Care and Management of
Children

P. Blakiston's Son & Co., Philadelphia

THE ADOLESCENT PERIOD

ITS FEATURES AND MANAGEMENT

BY

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PREFACE

In response to many requests from readers of the "Hygiene of the Nursery" it is my purpose in this little book to present an outline of the physical and psychical changes that are to be expected in the period of life between the end of childhood and adult age. Also to point out some of the methods of management that should be adopted to combat the dangers of these trying years and reasonably insure the evolution of adolescence into healthy and useful maturity.

My book makes no pretence at being an exhaustive treatise. Its intentional avoidance of technicalities and its brevity may, I hope, make it acceptable to the ordinary reader and lead to greater interest in, and closer attention to, matters that are of vital importance to the future well-being of our boys and girls.

LOUIS STARR.

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THE ADOLESCENT PERIOD

CHAPTER I

GROWTH, AND THE DEVELOPMENT OF MUSCLE POWER

General growth, or increase in height and weight—after the first two and one-half years, when it is more rapid than in any other period of life—is quite regular and constant up to the eighth year. After this, though continuous, it is slower until the age of eleven or twelve in girls and thirteen or fourteen in boys, when, as puberty is established, there is a decided acceleration, most noticeable during the fourteenth year in the former, when height and weight may exceed boys, and the fifteenth in the latter and continuing to the seventeenth or eighteenth year respectively. After this time there is a marked lessening in the rate of growth, as if the developmental energies were spent and in need of recuperation. In consequence, many girls almost stop

growing at seventeen, but with boys, under favoring conditions—good food, proper hygiene and judicious physical culture—there is a final period of increase at nineteen or twenty, which gradually and irregularly terminates in full height several years later, while weight augments until thirty or longer.

In growth, then, there are periods of acceleration alternating with intervals of comparative rest, and in these latter it is probable that qualitative improvements of structure are taking place through the same life force that produces gross increase in size.

In both sexes gain in height antedates gain in weight. Weight often increases long after full height has been attained, and during the years when both are augmenting their increments are not synchronous, the greatest of one frequently coinciding with the least of the other.

Gain in height alone is but one evidence of normal growth, and this must be associated with a proportionate increase in weight to show perfectly healthy vigor. Great tallness without corresponding weight and symmetrical development is abnormal and is usually at-

tended by a lack of reserve force or ability to resist strain or disease. The same is true, in a less degree, where weight markedly exceeds height. Between both of these features of growth there is an approximate standard of proportion for different years, and the nearer the individual approaches the average height and weight of his special age the closer will be his conformation to a model of complete symmetry and health.

A fairly accurate standard proportion of height and weight in the two sexes from the age of eight to eighteen years is shown in the following table:

Age in years	Males		Females	
	Height in feet and inches	Weight in lbs.	Height in feet and inches	Weight in lbs.
8	3.10	49.5	3.9½	47.7
10	4.2	59.6	4.1½	57.4
11	4.3¾	65.4	4.3½	62.9
12	4.5½	70.7	4.5⅔	69.5
13	4.7½	76.9	4.8	78.7
14	4.9½	84.8	4.10½	88.7
15	5	95.2	5.⅓	98.3
16	5.2¾	107.4	5.1½	106.7
18	5.6½	123	5.2½	115.4

Height and weight may be increased by good food, comfortable and hygienic surroundings and judicious exercise. School-work, properly conducted, has little influence upon growth in strong children, but, with the weak, appears to be helpful by leading to a more natural and regular rate of gain, and by giving an interval of rest through its tendency to retard the establishment of puberty, a rest which is later followed by more rapid growth. Hard mental and physical work, insufficient food, malnutrition and disease retard growth, but if the hampering condition be removed there is more or less rapid compensation, and an ultimate attainment of equality with those who have always lived in a favoring environment. Still, weight gained at the proper age is better retained than if made up late, and general growth is more normal when it takes place during the periods when the tissue-building force is naturally most active. In late adolescence, contrasted with earlier life, there is more variation in growth, much greater liability to retrogression and increased susceptibility to outside influences; unfavorable surroundings and conditions more readily

causing arrest of growth and preventing perfect maturity.

As adult age is reached, growth force seems to expend itself in a final effort to produce full stature and the individual is left physically slack and morally dependent upon his elders to whose influence also there is now a much greater susceptibility than in earlier years. Consequently those nearly approaching manhood or womanhood should be well looked after and receive physical care and parental guidance and protection.

The growth of the various parts and organs of the body is not uniform. The muscles, for instance, grow more than the lungs or stomach, and many rudimentary structures atrophy or disappear as age advances, so that at birth and at maturity the component parts of the body are very different in relative size. Most organs and parts of the organism grow intermittently; they are, too, subject to variations in order and degree of development in different individuals notwithstanding a similarity in height and weight, and they reach their greatest size at different ages; for example, the brain almost ceases to grow at puberty, when

the reproductive organs, the pelvis and the muscles generally are in their *nascent* stage—that is, growing at the most rapid rate. Other organs—such as the lungs—continue to grow into advanced age, when the muscles and bones, having reached their maximum, are steadily decreasing in bulk causing the loss of weight and feebleness of senescence. (Therefore the age of the body is relative, some organs continuing to grow or keeping young while others stop growing or become old, and the individual is senile, not because all parts of his body are old, but because the bones and muscles, which are the heaviest organs and those giving growth its chief characteristics, are retrograding.

The manner of growth of the different organs of the body is of much scientific interest, but attention need be given now only to the development of the muscles and their functions.

The importance of the muscles is readily understood when it is considered that they constitute in weight nearly one-half of the human body, that they are intimately concerned in circulation, respiration and digestion, and above all that they are organs of the

will through which all its manifestations are accomplished. Besides performing ordinary motor tasks the muscles are instruments of expression, every change of mental condition unconsciously altering their state of tension, though there may be no actual movement, and they are thus organs of thought as well as of volition. In the brain, too, the motor and purely mental centres are so closely associated that proper development of the muscles tends to improve intellection, and for this reason attention to muscle training is very necessary in the young and should be a part of the scheme of all educational systems.

As children advance in age their muscles increase markedly in length and thickness and become more firmly attached to the bones. In girls, with the exception of the uterine walls, the muscular growth is less than in boys, but decided differentiation in the sexes in this respect does not begin until the age of thirteen. Muscle growth may be unsymmetrical, causing unusual postures of the body or limbs and changing facial expression; or the bones may be twisted out of shape by arrest of some and over-development of other muscles, and a dis-

proportion in bone and muscle growth is at the root of the clumsiness so often exhibited by adolescent boys. With the establishment of puberty, since there seems to be an intimate sympathy between sexual and motive energy, special growth features are seen. There is first decided increase of leg power; next, of the biceps and back, and, later, of the forearm with its repulsive force. This gain is especially to be noticed and most rapid in boys.

Power gain, like general growth, is inconstant, being subject to periods of greater or less rapidity of increase; this is especially true of the legs, and as their power is very closely connected with sex and as sedentary habits tend to arrest development in this direction it is essential to encourage the taking of sufficient exercise to profit by the nascent intervals. The most rapid development of muscle power occurs between the ages of fifteen and nineteen years. After this the increase is slower but continues, especially in males, for six or seven years. The age when the greatest possible power can be attained is between twenty-five and thirty-five years.

Later there comes a slow decrease, though this is not marked until the fiftieth year is reached.

In addition to the gross features outlined above the child as it becomes older exhibits new expressions of motor force. These can be better understood by dividing the voluntary muscles into two functional classes, namely, the *fundamental* and the *accessory*.

The *fundamental* muscles are large and powerful, those of the limbs, shoulders and trunk for example. Their movements are simple, almost instinctive and take place synchronously, as in straining to lift a burden, or in alternating rhythm, as of the two legs in the act of walking. This group is best developed in the class of toilers doing the rough, heavy work of the world, and having little intelligence and less mental training.

The *accessory* muscles are smaller and much more numerous than the fundamental. They are concerned in more delicate movements, like those of the fingers, and are capable of combining for the production of very complex acts such as those involved in writing or articulate speech. Functionally they reach perfection later in life and proportionately to

education. Their activity directly reflects mental states, the influence of the latter being shown either by movements or by alterations in fibre tension which change the expression of the face, the modulation of the voice or the character of the hand-writing. In a word, the accessory muscles are practically organs of the mind.

Incomplete development of either of these two groups of muscles is quite possible. Hard, coarse toil or undue athletic training tend to hypertrophy of the fundamental muscles and, with coincident neglect of the accessory muscles, produces a being capable of feats of great strength but one incapable of fine, accurate work either mechanical or mental. On the other hand, and here there is greater danger of permanent ill-effects, too much school work associated with a sedentary life or a too early employment in trades requiring long hours of close attention and extreme manual accuracy over-strain or even arrest the development of the accessory muscles, with consequent nervous or muscular irritability and predisposition to choreic disorders. As both of these conditions are abnormal the

end to strive for is full development and adjustment of each group, and the best time to accomplish this is during the years when the increase of motor power is naturally most rapid, and when there seems to be the greatest response to appropriate regimen and exercise, measures which also promote mentality and general health. The small muscles are most readily over-strained from the fourth to the eighth year; after this to the age of twelve there is less dāṅgeṛ, but more again as puberty is established, particularly if fundamental activities be neglected. This being the period of very rapid power growth in the large muscles of the legs, back and arms and in those involved in circulation and respiration, there is less fatigue-resisting force left for the accessory muscles. Therefore, at this time, there should be less confinement and study or delicate hand-work and more outdoor life and play, with its relaxation and exercise. When it is desired to train the accessory muscles for complex and delicate acts, as playing some musical instrument, or any intricate hand work, the task should be begun at the age of eight or nine, taking advantage

of the interval when the functions of these muscles are not dominated by the great strength increment taking place in the fundamental muscles at puberty.

In children almost every impression received from without causes some response in the muscles. This may be either a mere change in fibrillar tension or an actual movement, which is often automatic. These latter, termed *automatisms*, are extremely numerous in early life and are illustrated by such acts as grimacing, twisting a button or lock of hair, tapping with the fingers or feet, sucking the tongue, etc. They may be exhibited by any muscle of the body, but those of the accessory group are mainly concerned in them, and whereas the fundamental automatisms soon disappear as age advances, the accessory ones are apt to increase until adult years or even remain permanently in peculiarities of facial expression, in certain habits of attitude or pronunciation, or such abnormalities as stammering or local muscular twitching.

Automatisms are increased by continued physical inactivity and mental effort, as long sitting at a desk in hard study, or at a bench

in some labor requiring concentrated attention and delicate finger work. Their character varies with the task, though they are not necessarily shown by the muscles used in it, and they indicate its difficulty and tendency to induce fatigue. When pushed too far they may advance to true chorea; may become excessive as in head-beaters, shakers, etc., or may pass into fixed attitudes and postures of body or limb indicating morbid cerebral conditions.

Ordinary automatisms must not be regarded as abnormal nor should efforts be made to suppress them, for, short of exaggeration, the more and stronger they are the better, and a good deal of restlessness is desirable in childhood. Many of those movements usually attributed to nervousness, such as fidgets in school and the awkward actions of the embarrassed or of those making efforts or greatly excited, indicate an abundance of untrained power of intellect, feeling and will. In the beginning of life, too, each part of the body should act freely and independently, and many automatic movements may be essential for proper growth in size and for development

of the brain centres. To this end it is necessary, in some cases, to produce these movements artificially by reflex stimulation, just as exceptional children must be purposely familiarized with the sensations of hunger, thirst, cold, heat, etc., and even be taught to cry and laugh. While, then, the automatisms should not be suppressed they must, after they appear, be controlled and moulded into smoothly co-ordinated acts. This is a difficult process at first. Even in so simple an act as sitting still, a young child often closes his jaws tight, shuts his fists, holds his breath and sets all his muscles tense, with an effort great enough to quickly cause fatigue; but control becomes easier and more and more complete as age advances and intelligence and will power increase.

The efficiency of the muscles depends upon their strength, their rapidity of response to will-commands, their diversity of motion, and the completeness with which these factors can be voluntarily co-ordinated. Modern conditions are not favorable to the best development of these desirable qualities. In the agricultural and manufacturing industries too

much is done by labor-saving machinery, and with more complicated processes, the worker takes the product—a book or a watch, for instance—through only a single step of its manufacture and has no interest or pride in it as a finished piece of work. Even with adolescent sports there is a tendency to limit them to the few and very expert and the majority, finding it not worth while to try to make the “teams,” fail to avail themselves of the benefits of the regular muscle training involved. Girls suffer more than boys in this respect, and, while there is no question of the evils of child-labor, more of the young suffer from too little than too much use of the muscles. When harm comes the blame should not be put upon the mere work but upon unhealthy surroundings, bad work-rooms, long hours, great monotony, over-specialization and excessive use of the accessory and neglect of the fundamental muscles.

The effects of this imperfect development of muscle efficiency are exhibited in the number of ordinary physical acts that many adolescents find it impossible to accomplish. They are also shown in the care that must be taken

to spare them any toil that is severe or trying in nature, and in their thin arms and legs, stooped shoulders, and shrunken chests and in persistent automatisms and other marks of constitutional feebleness.

Recognizing the importance of complete structural and functional growth and accurate adjustment of all muscles, not only for motor efficiency but for mental development, and remembering the fact that existing conditions, industrial and recreational, do not favor this result, it is easy to appreciate the necessity for certain definite systems of muscle culture. The best of these are the following:

I. Industrial Education.—Modern increase of competition, complexity of manufacturing processes and the abolition of the old system of apprenticeship, in which a youth was bound to a master to learn his craft, make industrial education necessary, not only to attain excellence in any trade but for the mere ability to make a living wage. This instruction is attended with more or less success in the various work-schools and trade classes which are slowly becoming more numerous and better in our country. Such instruction should be

diversified and not limited to a single tool or process, in order to develop the fundamental before the accessory abilities required in delicate work. In this way automatisms are best subordinated and a firm foundation laid for future intellectual efforts. This training may be undertaken safely during the periods of rapid increase of muscle power, about the age of puberty, when strictly *manual training* is apt to over-strain the fine muscles.

The best industrial education is obtainable on a farm, partly on account of the many different things that must be well done if it be properly managed, and partly because of the favorable health conditions pertaining to life in the country. The worst, on the other hand, is factory training. It is too specialized. It is ordinarily limited to a single step of some long and complicated procedure, and has for its object only rapid preparation for earning a living, and very frequently, too, undermines the general health through unsanitary surroundings.

II. Manual Training.—This method as carried on in special institutions and in allotted courses in the public schools tends to a better

practical education. The idea, as the name implies, is to train the hands primarily. As this cannot be done without training the mind, on account of the already mentioned intimate association of the motor and mental nervous centres, the results are to broaden the intelligence and increase interest in the acquisition of knowledge, to create promptness in action, dexterity, and a desire to do really good work and thus to augment effectiveness and prepare the student for some useful life occupation. Practically these ends are not, at present, perfectly attained. The ordinary methods of this system have the faults of not appealing sufficiently to the intellect. They are too centred upon teaching skill in technique and to the making only of parts rather than of completed things. They over-develop one side of the body and the hands, to the neglect of the muscles of the legs, back and trunk. Finally, manual training has not advanced with the changes in modern industrial methods. To be really useful it should, according to the age of the student, furnish for the muscles the best and most hygienic work for increasing their efficiency and symmetrical development,

while for the mind an understanding of the scientific side of methods, tools and products should be insisted upon. Further, instead of placing all pupils of an age in a class to be taught the same rigidly fixed task, the instruction should be adapted to the carefully studied needs of each individual.

III. Gymnastics.—As now used this term includes only the exercises employed in physical culture. Their objects are: (*a*) to bring out all motor possibilities, (*b*) to increase volitional control so that all actions may be consciously willed, (*c*) to economize force in postures and movements, and (*d*) to ensure symmetry and normal proportion.

(*a*) The ordinary activities of life, the various forms of labor and even many of the outdoor games exercise only a limited number of muscles, leaving the others and many possible combinations latent and wasting, and, in consequence, there are many things that the average youth cannot do. One system of gymnastics, originated by Jahn, aims, by a variety of postures and movements, to develop dormant or degenerating and also new motor powers, and by really general culture

to establish the greatest muscle capacity. This plan is very applicable to adolescents, and would be perfect if it were possible accurately to measure the amount and character of exercise required by each muscle or necessary to the best co-ordination, especially in the direction of neglected or new activities. Still, though this cannot be done, it is unquestionably useful if careful attention be paid to the personal element, different individuals requiring very diverse courses of training.

(b) Many of our activities are, or become, matters of habit, and are to a greater or less degree automatic. The more these can be brought into the province of consciousness, the more the engaged muscles come under the restraint of the will and a greater number of new combinations become possible and much energy is conserved. Some of the Swedish exercises are employed for this purpose. The most useful of these are those that require close attention and quick volition to convert into muscle movements the commands of a leader and accurately and promptly to imitate his actions. Here, also, individ-

ual prescription, though difficult, is very important.

(c) Force may be economized by a method (Ling's) which tends, by position and movements, to relax the flexor and increase the strength of the extensor muscles and thus overcome the effects of the doubled-up position assumed by the body before birth and seen after in sitting and in states of fatigue. The head is balanced upon the spine with little help from the muscles, the shoulders are thrown back easing the chest, the spine is held erect freeing the abdomen, and altogether bones are made to relieve muscles. This means an erect posture with the greatest ease and the least waste of energy, and, at the same time, a better mental poise, as there always seems to be more buoyancy when the extensor, rather than the flexor, muscles are in control. The movements of this method educate feeble, neglected muscles, those not called upon in common activities, and secure better general development. They prevent the deformities resulting from excessive use of muscle groups and over-specialization in labor. Like other

exercises they must be carefully adapted to personal requirements.

(d) Gymnastics, to secure symmetry and proportion, involve primarily measurements of physical dimensions and tests of strength, and secondarily, prescription of the exercises calculated to correct whatever deficiencies may be present, the standard being the average for the age, weight and height. These measurements are charted and so, later, are the results of exercise, and this record of progress creates an interest in and encouragement to continued work, especially if thereby some hereditary imperfection or weakness be seen to be disappearing. Further, accomplished physical improvement may lead to a desire for moral and intellectual betterment.

In the efforts for general physical culture, care must be taken not to warp any particularly good growth tendency, and not to ruin individuality by monotonous uniformity. Weak parts, too, must not be over-worked. Ordinary gymnastics do more for the arms, shoulders and trunk than for the legs and are almost entirely wanting in mental influence, and in these respects are open to amendment; still

they are very serviceable during adolescence and the use of the gymnasium should be general and not limited to a few athletes. So far as the body is concerned the effects of systematic exercise with "training" are remarkable; the muscles are strengthened, vital force increased, and ability developed to endure the strain of city life and resist disease; at the same time habits of temperance and chastity are encouraged.

IV. Play, Games and Sports.—Play brings out many hereditary and rudimentary motor habits and, in contradistinction to toil, is never concerned with anything really new. For this reason play is a pleasure and, unlike set systems of exercise, is as much a matter of mind as of body. It neither over-trains the physical side of the organism—exaggerating the muscular elements—nor unduly cultivates the mental side, causing weakness or automatisms. Play develops each. Besides being the natural it is the best sort of exercise because it produces perfect growth. Play gives an enjoyable outlet to tendencies which might otherwise lead to the use of stimulants or to sexual vices. It does much to realize

the ideal of a sane mind in a sound body. It develops muscle power and courage. It leads to purity of life and good habits. It gives energy, individuality, quick decision and promptness in willed actions. It lifts troubles from the mind and, to the healthy, is a never-failing source of exhilaration and recreation.

Some plays give greater pleasure and are more absorbing than others because they bring into action old racial traits. Thus in man's beginning, accurate throwing, running, hitting with a club were essential to survival both in obtaining food and in combat. While this need no longer exists, the same activities instinctively demand cultivation for motor efficiency. Hence, games with a bat and ball are racially familiar and correspondingly attractive, and the degree of interest and enjoyment attending any form of play is a measure of its developmental value.

As previously stated, the process of growth is not uniformly continuous. It is subject to times of rapid increase alternating with intervals of comparative rest, and to get the best results from any form of physical culture advantage must be taken of the former or

nascent periods. The natural exercise of play is no exception to this rule, and in this connection it is interesting to note the manner in which play instinctively changes in character at different ages. Before the age of six children rarely play games spontaneously, but do so at the suggestion and under the direction of their caretakers. After eight, games requiring physical activity are preferred, and ten or eleven is the age when the variety is greatest. Then selection begins and more attention is given to fewer pastimes. Games involving pursuit increase markedly from six to nine, are almost abandoned at sixteen and the use of toys and "make believe" plays decrease still earlier. With boys, to eighteen, games with a ball rise constantly in popularity. In girls, cards and other table games increase steadily from ten to fifteen. In boys, after twelve, a large proportion, one-third or more, of games involve contest and struggle to gain physical advantage and mastery over companions. "Team" games soon begin, in which the individual is subordinate to his mates and to a leader, all working to a given and planned end. Now, too, the games are often of a rough, out-

door character. Later, there is still closer association in sports with more call upon the virile qualities of bravery, loyalty and self-control. In girls, there is a steady decrease in running plays from nine to eighteen years, with a rapid leaning to games of chance. Organization and specialization, so noticeable in boys, are almost absent, and seasonal games far less common, on account of a greater inclination for indoor life. The desire to play with dolls is most marked about the ninth year and is usually over by fifteen, though it may continue for years longer.

The fundamental muscles naturally incline to rhythmic movements at all times but especially during the age of greatest increase in strength, and such movements are more facile because they require less conscious mental effort or attention. This accounts for the pleasure the young take in dancing, marching or exercising in time to music, and for the work-songs of sailors and others which ease and socialize labor and at the same time concentrate the efforts of a number of hands in lifting or pulling. Dancing under proper restrictions and in good surroundings besides

being an amusement is a rhythmic exercise which exceedingly well meets the motor requirements of the young, and, while much has been said against the purity of modern dances, it is quite possible that they may work off vicious propensities in a comparatively harmless way.

About the time of the onset of puberty in the male, a spirit of pugnacity normally appears. Though more or less brutal, no effort should be made to stamp out this instinct, but it should be tempered and directed; this may be done by boxing, fencing, wrestling and military training.

Over-pugnacity is certainly a bad trait, but a cowardly refusal to fight when necessary is worse, and every healthy boy at or about the age of twelve years should be taught to box in order to hold within bounds and discipline the fighting tendency. With bad associations removed, boxing is a very manly art. It trains the muscles, cultivates quickness of eye, hand and foot, increases decision, will power, self-reliance and self-restraint. It lessens nervous irritability and greatly amends passionate, peevish and effeminate dispositions.

Fencing is an allied art which, while improving the figure and bodily poise and giving quickness of eye and suppleness of arm and wrist, develops one side excessively, and is less attractive to the Anglo-Saxon boy, since it does not satisfy the instinctive desire to physically punish without maiming an antagonist.

Wrestling, the primitive method of unarmed conflict, affords, by the close contact of body to body, so many opportunities for unfair practices that as a sport it must be very carefully guarded. In a crude form wrestling is a very common amusement with boys and is also a popular branch of scientific athletics and, under proper restrictions, a good one as it cultivates many varied movements and increases strength, waryness and agility.

A judicious amount of military training very successfully and healthfully regulates the combat desire and has other advantages. Company marching requires correct and simultaneous movements of the legs and arms and good carriage; the drill with weapons gives the individual a feeling of co-operation and care for personal appearance and of equipments, and the uniform removes dress

distinctions. Further than this, discipline, regular hours, wholesome food, outdoor exercise, tactics and camp life all favor health of body and mind. A drill master, a uniform or a few features of a soldier's life introduced into the ordinary school give a better character to its teachings, create new standards of honor and tend to increase patriotism.

With the longing for combat, the boy in his teens develops a desire of organization leading, in his play, to association into teams and crews. Football, baseball and rowing involve such association and have an educational value. The rules governing these sports are quite intricate, and in learning and following them the mind is cultivated at the same time that the muscles are trained. The subordination, too, of each member of a team to its captain augments the social and co-operative instincts, and the glory of school or college arouses a spirit of servitude and devotion. It must be remembered, however, that to obtain the best educational results for the individual, any team must assume the sportsman-like attitude of preferring a clean game with defeat

to victory won in an unfair way, and the temptation to "do anything to win" must be rigidly avoided.

Of other forms of sport, swimming—especially in natural water, in contradistinction to tanks—is an admirable exercise and one that satisfies a racial instinct so prevalent that to reach water and get a swim has been found to be one of the chief incentives to truancy. The movements required in swimming, unlike those in walking or running, exercise the involuntary muscles and strengthen the heart and blood-vessels. The surface contact of cold water contracts the capillaries and sends the blood inward and thus increases the activity of kidneys, lungs and digestive organs. The reaction on leaving the water is a tonic to the cutaneous circulation, and finally, this form of bathing powerfully reduces plethora of the sexual organs.

When games and sports receive the attention that they do now in school athletics, which will be the subject of the next chapter, they possess in a marked degree the very desirable attributes of play already mentioned, and in addition supply safe subjects for thought and

conversation. But this is the case only when they are reasonably managed. If given too prominent a place and overdone they are fraught with dangers that, while less accentuated than after the boy has entered college, are still present and must be avoided. Among these are distraction from study; undue development of brutal impulses and of muscle to the neglect of mind; harmful newspaper notoriety; exaggeration of the importance of winning contests, often leading to unsportsman-like methods of play that ruin the morals, and a tendency to over-specialization and limitation of participation to a few experts.

In conclusion it must be understood that playfulness is energy left over from the performance of vital functions, digestion or respiration for instance, and children who cannot play are unable to study or work without over-draft upon their life energies. Any task is best and most easily accomplished when a play interest can be infused into it, and general education might well begin with properly chosen and directed games. A school that discourages play favors dulness.

CHAPTER II

PHYSICAL EDUCATION

ATHLETIC TRAINING IN BOYS

The beneficial effects of muscle culture, and particularly of the outdoor sports now so uniformly encouraged in good schools, can be seen in the better health and development of the past few generations of boys. Yet, like many another useful thing, academic athletics require careful guidance, and there is little doubt that they should have more skilled attention than they usually receive. No one can rightly claim that, up to the present time, a close approximation to the best possible results has been attained; nor can the fact be denied that they may produce undesirable and injurious effects which may escape attention until detected by a physician after the lad's life is ruined by a crippled heart or broken-down nervous system.

These unfortunate issues are encountered

most frequently between the thirteenth and eighteenth years, when the greatest growth changes are taking place in the body and its organs, and when the school-boy's training is not looked upon as seriously and is placed in less competent hands than it is after he enters college, older, better grown and really in less need of very careful management. Every college team has its medical attendant, its trainer, its masseurs, its highly salaried coach with his corps of assistants, and its units are looked after as thoroughly as a pugilist or a horse about to enter the ring or run a race. On the other hand the younger boy, while now given a playground and set hours during which he is required to play, is fortunate if his sports be overlooked by a master who has been something of an athlete in his time. This is certainly better than no supervision whatever, but is quite inadequate.

The qualifications for a director of juvenile athletics are an understanding of normal growth processes; a capacity to make a sufficiently thorough physical examination to determine individual needs; ability to adapt exercise to and determine its effects upon

development and health, and familiarity with dietetics and hygiene. Such requisites imply a special knowledge that is not possessed by ordinary masters or by parents with whom often rests much of the general management, and consequently both must have assistance. This in boarding-schools can be secured by adding to the staff a medical director who should be responsible for both physical training and hygiene, and in day-schools through the family physician who should make preliminary investigations, suggest appropriate exercises and subsequently keep the boy under careful observation.

The school-boy after the age of thirteen years enters a period of rapid growth in height and weight. At the same time, as will be seen later (Chapter III), there may be disproportionate development, as of the two sides of the body for instance, or of the bones or muscles, and a liability to poor health that is very decided from the twelfth to the fourteenth years. In this interval, too, the systemic strain of the establishment of puberty is at its maximum. Besides these general conditions the synchronous growth changes in

certain parts and organs of the body are important and may be studied in more detail.

The *bones*, like other organic tissues, are composed of cells and supplied with blood-vessels and nerves, and increase greatly in size from birth to maturity, their most rapid growth taking place just before and after puberty. They are subject to developmental irregularities; thus ossification may be retarded or arrested, or calcareous hardening of cartilage may be premature or excessive, making them too dense and large and causing them to encroach upon adjacent structures. Again there may be faults in chemical composition. Sometimes, an over-proportion of lime salts resulting in brittleness with great liability to fracture; at others, a deficiency of these salts making the bones too soft and readily bent and twisted, the condition encountered in rickets.

Without any actual disease, different forms of spinal curvature are apt to occur during the period of rapid bone growth, and now, also, irregular or inordinate traction of unduly developed muscles is quite capable of producing deformities. Like this unequal strain the carriage of the body has a marked effect. An

habitual stooping posture leading to contraction of the chest with consequent impeded respiration and depressed vitality; so, too, prolonged sitting with the legs crossed interferes with pelvic development.

The *heart* materially increases in size from birth to the fourteenth year, and with the advent of puberty must respond, by increased functional activity, to the widening area of circulation that takes place at this time. This demand on the cardiac muscle is attended by enlargement which may be great enough to appear abnormal, but this is only temporary and, provided general health be good and there be no excessive or continuous strain, is soon compensated and the size of the organ again becomes proportionate to that of the frame.

Before puberty, the blood-vessel area is large compared with the size of the heart; after, the reverse is the case. This latter condition is attended by a more forcible cardiac impulse, by higher blood-pressure, and often by transient palpitation, alteration in the rhythm of the ventricular contractions and other disturbances that, while entirely independent of structural disease, give rise to con-

sciousness of the presence of the heart, a common and uncomfortable symptom at this age. Now, also, the pulse rate decreases, a change which depends more upon height-growth than age, the beats being uniformly slower in those of tall than of short stature.

24p The *lungs* and *chest* increase in size with the rest of the body and take part in the rapid growth of the pubescent years. In boys the rapidity of yearly increase in the volume of air that can be expelled after a full inspiration—the *vital capacity*—measured by spirometer, augments at the age of fourteen years, decreases a little at fifteen, and is greatest at sixteen, though there is a constant and decided gain throughout these years, and the rate of increase is much greater in those who have the advantage of proper physical culture. The development of vital capacity is an important element of strength and attends gain in weight more closely than in height. At puberty the chest capacity is lessened by the normally rapid cardiac growth, though this reduction is more than compensated by the coincident expansion of the thoracic space and the increased area of the pulmonary air cells.

The girth of the chest, measured on the nipple line, enlarges most markedly from the fourteenth to the seventeenth years. Its increase is less rapid than that of vital capacity, as it is little dependent upon tissue elasticity.

The relation between vital capacity and body weight is called the *vital index*. One object of athletic training is to increase the former while reducing any excess of the latter. Exercise also gives greater efficiency to respiratory surfaces, and the ability to breathe freely and deeply insures an abundant supply of essential oxygen. It frees the blood from carbon dioxide and augments endurance under effort and resistance to disease, and is a fundamental condition of normal growth and health.

The number of respiratory movements decreases from infancy, when it ranges as high as forty per minute, to puberty, when, in a state of quiescence, it falls to twenty or eighteen. Afterward the rate continues unchanged unless affected by disease.

The growth of *muscles* and of *motor power* as well as some methods of securing their due evolution have been considered already (Chapter I). It is necessary, only, in this connection

to reiterate the need of a proper estimation, in relation to growth processes, of the periods when exercise will be most beneficial, and to recall the desirability of symmetrical development of the fundamental and accessory muscles and the dangers of over-forcing either group or of over-cultivating mentality. A boy should leave school neither a muscle nor a mental machine, but with a sound foundation for subsequent thorough training of both body and intellect.

The *brain* grows most during the first six years of life, though there is a slight and steady increase until the age of fourteen when it reaches about its full size. After this, development is continued by the folding in of the convolutions and by other structural refinements, tending to the greater functional power and perfection exhibited at maturity. Some of this tissue refinement is necessary for rational thought and the higher mental processes that are rarely possible before the twelfth or fourteenth year. Before this age instruction should be simple, restricted as to hours and well interspersed with play, and devoted chiefly to the cultivation of the

memory and the special sense centres, *i.e.*, those of sight, hearing, etc.

The *kidneys* may be referred to here because their function is connected with certain phobias that are common in early adolescence. These glands grow from birth well into adult life, and their secretion is the medium of removal from the body of urea, which is the principal nitrogenous product of retrograde tissue change. Sometimes about the age of fourteen there is transient albuminuria, sufficiently marked to suggest renal disease, and another occasional occurrence is a temporary appearance of sugar in the urine. At this time, too, the nervous fears mentioned above are prone to arise in those who have had their attention directed to the urine by other victims or by reading misleading advertisements. They begin to examine the excretion daily and become much alarmed if they find it turbid or containing a red or white deposit, or if its odor be strong or the reverse, and exaggerate these trifling features into indications of serious disorders of the kidneys or of the sexual organs. Urged by their fears they adopt some special diet and regimen; enter into minute comparisons with

their youthful companions, and unless they be confiding enough to find a ready ending of their anxieties through the counsel of some experienced older friend, they frequently drift into the hands of charlatans to undergo needless and purposely prolonged treatment.

From this brief outline it is easily seen that throughout the school years important developmental changes are taking place in the component parts of the frame—the bones and muscles—and in such vital organs as the heart, lungs and brain. In addition we know that at this period growth progression varies markedly in different individuals and that it is greatly influenced by exercise or the lack of it, either extreme being harmful. All of these conditions should weigh in prescribing the quality and amount of muscle training, and should be investigated in the preliminary physical examination. This must not be delayed after the desultory plays of childhood have given place to boyish sports.

The points to be determined are weight and height and their approximation to the normal correlation; the presence or absence of spinal curvature; the equality in length of the legs

and arms and the general symmetry of the body; the normality of the heart as to size, sounds, rate and rhythm of pulsations; the girth of the chest; the vital capacity, and the effect of such moderate exertion as a short run upon the frequency of pulse and respiration. The state of the throat in regard to enlarged tonsils, and of the nose as to adenoids or other obstruction, and perfection of sight and hearing are important but are matters for a medical expert, as are also opinions on general health and robustness and predisposition to constitutional disease.

Should this investigation place the boy in the average normal class he may safely enter into all the school sports, being subject only to the general restrictions to be stated later. On the other hand, should the spine be bent, the shoulders stooped, or should there be inequality in the development of the limbs or sides of the body, special exercises are required and he should be trained by himself until the deformity has been overcome. Again, a boy with over-large heart or a contracted chest must not take part in the active games of his fellows until comparative rest in the one

instance and special breathing and expanding exercises in the other have removed the hampering condition. Of the latter cases there are many in which constriction, with consequent embarrassed breathing, is the result of adenoids or hypertrophied tonsils obstructing the respiration high up in the air passages. Unless these growths be removed by efficient surgical operations very little can be done to increase the circumference of the thorax and vital capacity.

Besides these instances with noticeable physical defects there are other city-bred boys who have been pampered and unduly guarded by mother or governess, who have taken no exercise beyond dancing lessons or formal walks and have no idea of really boyish pastimes. These unfortunates are puny or lax fibred and effeminate, and before they take part in any athletic games require individual and gradual but progressive muscle culture, and must be taught co-ordination of eye and hand, familiarity with the implements of sport and interest in pursuits involving motor dexterity. Otherwise their ineptness is a source of embarrassment and is so ridiculed by their play-

mates that they are quickly discouraged, give up trying and become uninterested onlookers if not actually influential in demoralizing their associates.

Just as these weaklings are to be trained apart, so is it necessary in athletics to separate normal boys of different ages, letting the beginners compete with each other and not with their older schoolmates. These, through their greater strength, may injure them, or so overwhelm them by their greater expertness that, on either side, interest in sport is quickly destroyed.

Measures to counteract special bodily defects and those for conditioning purposes require more constant and critical attention and more frequent estimation of results than are necessary in the physically fit. They embrace light gymnastics, a variety of movements without apparatus, and breathing exercises, and should be accomplished as much as possible out-of-doors, or in a spacious, sunny room with plenty of fresh air when the weather is very cold. The effects of the allotted exercises should be ascertained at intervals six or eight weeks. The same applies to well-

developed boys, though in them the re-examinations need not be made oftener than once or twice each year. The findings of the preliminary and subsequent examinations should be carefully recorded.

With a boy in fair condition there are, in addition to betterment in health, growth and endurance, improvements in certain special directions marking the good effect of athletics. These are a decided increase in the important matter of *vital capacity* and a gain in muscle power, indicated by greater *lift*, *pull*, and *putting* ability, *i.e.*, the height and distance that a weight can be hurled; by a rapid strengthening of leg, biceps, back and forearm in the order named, and a more forcible hand grip and greater wrist strength. Such gains are most decided and readily produced during the several years of pubescence when the involved fundamental muscles naturally undergo an accession of growth. They are also attended by increase in stability, control of reflex impulses, and precision and co-ordination of movement, conditions indicating progressive mental development and in which the delicate accessory muscles take part. In this connection, how-

ever, it must be understood that athletics have merely an indirect bearing upon the accessory muscles. Also while the fundamental group is being developed, during the period of naturally rapid growth, no attempt should be made to cultivate extreme accuracy in accessory muscles by intricate hand or brain work. These should be trained earlier or later, since a double strain upon growth force may produce precocity and nervous and muscular disturbances.

Motor education, including play, games and sports, has already been studied (Chapter I), and here it will be necessary only to refer briefly to gymnastics and then pass to a further discussion of open-air sports which are so valuable for development and which now take such a prominent place in physical training.

Gymnastics are very useful in their way, particularly as a substitute for outdoor work in the earlier months of the year when the days are short and play-grounds often too soggy for use, and when there is neither snow nor ice for winter sports. The gymnasium floor affords space for boxing, fencing, wrestling, and basket-ball, and it is quite possible, also,

to keep up a continuous training for outdoor sports by providing rowing machines, cages for practice with bat and ball, squash and hand-ball courts, vaulting bars and so on. These make for interest and furnish a play element, both very desirable features that are lacking in the old-fashioned exercises with dumb-bells, Indian clubs, or pulling weights. Another useful sphere of gymnastics is that of putting in condition the under-developed and correcting spinal curvatures and various deformities. Such cases, at first, are much benefited by simple movements of the body and limbs either entirely without or with the lightest weights, and later, by very carefully selected exercises on the trapeze, swinging rings, and vertical and horizontal bars. With either feeble or strong, all gymnastics require the closest individual oversight and adaptation and should be planned to give strength and agility to the muscles, without straining or hypertrophying them or injuring the vital organs, results which frequently attended the old-time work with parallel-bars, weight lifting and other ponderous exertions that filled the monotonous and wearisome hours of exercise.

Outdoor sports combine both play and interest, have the added pleasure of contest, and make a decided appeal to the intellect. They surpass gymnastics in general evolutionary value, and by their popularity make an easy matter of any course of training. But all forms of sport are not equally safe and even the best may do harm if pushed to excess. This fact is demonstrated in a boy when he becomes pale and nervously irritable; sleeps poorly; has little appetite after exertion; suffers from indigestion; rapidly loses flesh; is constantly tired and apathetic; is stupid with his studies, or, in other words, "goes stale." For this "over-trained" condition a competent physical director is always on the lookout, and will anticipate serious trouble with nerves, heart or other organs or a complete breakdown by shortening the exercise, changing from one sport to another or, if the warnings be sufficiently grave, by ordering a temporary rest.

The best of the sports for schoolboys are those in which a ball is employed. First baseball, then tennis and next football. In these the interest of play and contest, already referred to as very essential in youth-

ful athletics, enter markedly. Each exercises the motor system generally, but primarily the arms, back and legs, the systematic use of the muscles of the latter being of great consequence in those leading a sedentary student's life. Besides, they involve enough short-distance running to increase vital capacity; they train the eye; produce alertness and activity, and improve judgment and ability to think, decide and execute quickly. Accomplishing all with little risk of straining the heart or exhausting nerve force, as the exertion involved is not sustained, there being frequent opportunities for brief rests while the game is in progress. The dangers of football, about which so much has been said and written, have been very materially lessened by recent revisions of the rules of play. Those that remain cannot be fairly used as arguments against one of the most interesting and manly games, and they can be practically eliminated by establishing a rule permitting only boys of about the same age, weight and strength to compete with one another.

Golf is another excellent exercise that trains many good qualities. For schoolboys, how-

ever, it is too sedate, requires too much time, and altogether, so far as males are concerned, appeals most to those who have passed the age of impetuosity and the enjoyment of strenuous pastimes.

Of track and field sports the broad and high jump, pole vaulting, weight putting and reasonable walking matches have their value, though these are wanting in interest and comparatively few boys are willing to persevere in their practice. Running races—whether the dash, hurdle, relay or long distance—are open to adverse criticism. This cannot fail to be the opinion of every unbiased observer who has attended track meets and has seen the exhausted state of the majority of runners as they reach the tape. The effort is excessive, puts entirely too much strain on the heart at any age, and is especially trying about the period of puberty when the organ has a tendency to temporary enlargement. If employed at all at this time, with the object of improving “the wind,” the run should be limited to a jog-trot covering not more than half a mile. A distinction must be made between the running incidental to ball

games and race-running, and though strongly favoring the former I would entirely forbid the latter as an exercise for schoolboys. One expects more from athletics than the mere development of muscle and lung capacity, and in these days of motor cars, telephones and aviation it is difficult to recognize any advantage in an ability to run a few miles or survive a Marathon.

Rowing is an efficient developing agent, as well as an accomplishment that may be serviceable on occasion, and hence is desirable for everyone. Outside of the rather remote risk of drowning it has few objections, cardiac strain being the principal, and this comes under consideration and is to be guarded against only in hard racing over a long course. Pulling steadily and easily one may row a light boat for hours and miles with little fatigue of general or cardiac muscles, but a fast two- or four-mile race often causes one or more members of the crew to faint or even fall from the shell in exhaustion, and of course such an expenditure of force can only be hurtful. A quarter- to a half-mile course is quite long enough for school racing.

Swimming, both a very favorite pastime and an admirable exercise, should be taught to every one in childhood, since at some time it may be the means of saving life. No one should be allowed to take up rowing or other water sport until swimming has been reasonably well mastered. Its good results have been detailed already (Chapter I), and no bad effects are to be looked for except in long-distance swimming and racing, or from too prolonged immersion.

Of winter sports skating and coasting are good substitutes for the outdoor games of warm weather and acceptably relieve the monotony of the gymnasium, and in hockey on the ice the boy gratifies his never-failing longing for some form of ball play.

Training, as the process is usually understood, is quite out of place with schoolboys. The question of abstinence from tobacco or alcohol requires no consideration for they presumably use neither, and there is little change to be made in diet since, on account of the rapid growth that is taking place at this period of life, all ordinary forms of food are required by the system and—given health—

are readily digested and assimilated. This does not mean that any sort of food will do. On the contrary, it is essential that it should be of good quality, simple, sufficiently varied, and well cooked—that is, so prepared that it is appetizing and that its nutritious principles are retained. Neglect of these fundamentals is inimical to both economy and health, but is far too frequent, and one sees many homes and not a few boarding-schools where the best that the market affords is spoiled by a bad cook, the food put upon the table being so tasteless and ill-served that even a hungry boy will turn from it, wasting more than he eats.

Another common fault is the use of the same article over and over again at successive meals, though in different forms, until it is completely consumed. For instance, roast beef served hot for Sunday dinner, cold for supper, hashed for Monday's breakfast, and if there should be, unfortunately, any still remaining as a meat and potato rissole for the next mid-day meal. With fish the poor boys have often the same experience, the changes being run from hot boiled fish to fish cakes, and finally a cold

fish salad. Diet schedules have been sent me for criticism because so many of the athletes were going stale, lacked appetite and had to be ordered extras. No fault could be found with the quality of the food, but the cooks prepared it badly, otherwise there probably would not have been so much left over for tiresome repetitions. The matrons, also, who had charge of the commissariats were filled with false ideas of economy and without proper understanding of their duties.

Again, vegetables often do not have a sufficiently prominent place on the school table, and there is a tendency to over-use the ready-to-eat cereals, to serve tea and coffee too freely, and to misunderstand the food value of milk.

With one or more farinaceous articles—potatoes, rice, hominy or macaroni—there should be at least two green vegetables for the mid-day dinner. This is easy enough in summer, and may be continued throughout the year by making use of peas, beans, asparagus and tomatoes properly canned or preserved in glass, and by freely using the winter vegetables—turnips, carrots, celery and cabbage—which

are exceedingly wholesome and nutritious. None of this class of foods should be fried or prepared with rich sauces, but should be simply boiled and served plain or seasoned with a little good butter and salt, or—in the case of potatoes—baked and for variety mashed or creamed.

The ready-to-eat cereals are very analogous to toasted bread, having been so heated in their manufacture that a great part of their nutritious constituents has been converted into charcoal, and while they taste very good have little food value. The best breakfast foods are ordinary coarse oat-meal, cracked wheat, corn-meal and hominy grits, that require soaking over night and slow boiling for two or three hours in the morning. By this process all the gluten of the grain is retained, uninjured by the moist heat that dextrinizes the starch, and the resulting soft porridge eaten with cream or milk and slightly salted or with a little sugar is highly nourishing. With the four cereals mentioned it is easy to secure enough variety.

The need for tea and coffee in boyhood is about as small as for wine or tobacco. For

hot drinks in the morning a cup of cocoa and milk or hot milk flavored with chocolate meet all demands and are preferable because free from undesirable stimulation of the nervous system.

Milk contains albumin, fat, sugar and salts, and must be assigned its proper place as a food and not a beverage. On entering the stomach its casein is quickly coagulated by the gastric juice, and forms a firm curd that separates from the whey, and is quite as solid and requires as much digesting as a bit of masticated meat. Milk, therefore, may be taken as an addition to the lighter meals—breakfast and supper—but it must never be allowed at dinner lest it cause repletion. Nor at any time should milk be substituted for water to relieve thirst.

As to meals, breakfast should be substantial; dinner, at mid-day, the heaviest, and supper always light. They must neither be hurried nor should there be study or active play until half-an-hour has elapsed after eating.

Of other health measures the question of sleep will be fully considered later (Chapter III) but it cannot be too often repeated that

each boy must have his separate bed and a room to himself. This may be accomplished in boarding-schools by dormitories divided into cubicles, of which the number must not be so large that they cannot be thoroughly overlooked by a master or some trusted member of the highest form. The dormitory must, if possible, have a southwest exposure; be capable of ventilation by large windows and of moderate heating in winter. Of course, the bed and bed covering must be kept absolutely clean. Boys from twelve to sixteen require at least ten hours sleep and when they are healthy and lead a rational life with study and outdoor play properly proportioned, they usually sleep soundly from 9 p.m. to 7 or 7.30 in the morning, and the demands of study never warrant any curtailment of these hours. If a boy be long in dropping off to sleep or waken early, he is probably being overworked mentally, is being badly fed, or is getting insufficient fresh air and exercise. An hour for retiring should be fixed. A rising bell may be rung at a set time before breakfast, though no boy should be forced, if awake before, to remain in bed waiting for this call, but be free to rise as soon

as his sleep is finished provided he be quiet, dress quickly and does not study before he has taken food.

Provision should be made for regular bathing, and with younger boys some attention may be necessary to insure personal cleanliness. If a bathing-tank be accessible the bath becomes more attractive and is sure to be more frequently taken, than if only an ordinary tub be at hand. A tank also is useful for teaching swimming during the months when open waters are too cold.

The temptation to cram a boy with book knowledge and, if he be bright, to push him on to more and more advanced branches will be avoided by the sensible master. Five hours of actual brain work—and these divided between study and recitations—are quite sufficient for the age under consideration. These hours must be distributed throughout the day; three, with fifteen minutes rest intervals—forty-five minutes in all—in the morning; one, after mid-day dinner and one in the evening. The fourth hour should be movable so that during the season of short days the early afternoon may be utilized for outdoor exer-

cise. Saturday afternoon and Sunday should always be free.

The expediency of such moderate study combined with the recreation and physical culture of proper athletics and general hygienic management will be demonstrated in the boy by more ready learning, by better remembrance of instruction, and by a proportionate development of mind and body and by sound health. These qualities will fit him, when he leaves school, to take up the harder work of college and, later, the sterner duties of mature life.

MUSCLE CULTURE IN GIRLS

In the consideration of this question one must remember that girls are physiologically unlike boys. It must be recognized, too, that strength of body is even more important to them; that well-developed muscles act as a counterpoise to weak and irritable nerves, and that, in consequence, all schemes of education for girls should devote as much attention to physical as to mental culture. Further, the old-fashioned though sensible view that motherhood is the noblest object in a woman's life

must be accepted; emancipation and higher education relegated to a less prominent position, and the idea abandoned that there is any shame in femininity and its functions. This should not be taken to imply that women must be subservient or ignorant. Their nervous and mental health require absorbing occupation, especially so if they do not marry reasonably young—before twenty-five—and they should be sufficiently instructed to take advantage of the opportunities for independence and self-support to which they now rightly have access. At the same time it is grievously wrong to lose a good wife and mother in the making of a mediocre competitor in the material affairs of men.

Much that has been written about boys in regard to the investigation of physical condition; the importance and the effects of exercise; the laws of sleep, feeding, bathing, regulation of study and general hygiene, applies equally to their sister. It is a serious mistake, however, to attempt to follow the same lines in the athletics of the two sexes. Their sports must, in the main, be different and no one ought to think of really "training" a school-girl.

Contrasted with boys, girls are neither so tall nor so heavy, except for a short time about the age of fourteen years; their bodies are rounder with more fat and less muscle; their strength, as measured by dynamometer, is inferior by about one-third; their bones are lighter though their pelvic development is greater, and their vital capacity is smaller. There are, of course, other marked anatomical and psychological differences, but the distinctive feature of most importance is menstruation with its periodically recurring hemorrhage and systemic disturbances. The appearance of menstruation at the proper age and its subsequent regularity are essential to health, and yet the function interferes with physical and mental education, and together with the other structural differences indicates that ordinary exercises and sports must be specially modified if they are to be advantageous.

Many mothers are negligent of the regimen that should be adopted to secure the bodily welfare of their daughters, and in boarding-schools, where the best care would naturally be expected, there is much mismanagement. This unfortunate condition is the outcome of ignor-

ance or of the illogical assumption that the question of sex is of little consequence and that after puberty there is such a close general similarity between boy and girl that any routine suitable for the one must be equally so for the other.

That there may be a better understanding of the subject the following points require consideration. First, and quite as important as any, comparative rest of mind and muscle must be maintained during pubescence, or from the age of thirteen to fifteen, and even longer if this interval be insufficient for the establishment of regularity in the menstrual flow. In regard to the muscular system, however, a life of too great inertia must not be led. On the contrary, a girl must live much in the open air; drive or motor; walk a mile or more once or twice daily, and exercise the arms and back in garden work or some kindred occupation. In winter and when the weather forbids going out she may practise dancing; play battledor and bean-bags; take deep-breathing and movement exercises, and do the lighter part of the work of keeping her rooms tidy.

Some time early in these years and before

menstruation is too imminent, the mother or, if at boarding-school, some responsible person, must prepare the girl for the coming change, and with the first and subsequent periods the same authorities must order and see to it that retirement and rest are absolute while the discharge continues (see Chapter V). These lay-offs cannot be omitted safely even after the function becomes quite regular, and consequently any form of exercise must be subject to periodical interruptions of from five to seven days out of every four weeks, and the remaining three-quarters of the time, only, can be utilized for muscle culture.

Of the various methods of exercise, gymnastics are less useful for girls than for boys. In fact a girl's gymnasium should be merely a large, light and airy exercising room without heavy apparatus, ball-cages and rowing machines. There should be plenty of floor space for marching, deep-breathing exercises, calisthenics, fencing, basket-ball and dancing, with, when possible, an annexed squash court and a swimming pool. The gymnasium, too, is the place for correcting deformities and for strengthening

the feeble girl so that she may take her part in the general class exercises.

As is the case with boys, the outdoor games and sports are more popular with most girls than gymnasium work, and, at the same time, are more developmentally useful. They have objections, though, in that many of them are much too strenuous, while with others the player becomes so keen and so interested in the contest element that they may do harm unless duly restrained. Games to be encouraged are golf, tennis, basket-ball in the open, croquet and bowles, and of sports swimming, light boat-rowing without racing, and moderate cycle riding in summer, and skating and coasting in winter are the best. Walking to be a good exercise must always have an object. Otherwise, it is a mere monotonous muscular labor that does little but fatigue.

In this connection it must be noted that the act of walking is too often improperly performed. A little observation will prove this and show the necessity of making sure that every child uses feet and legs properly, that there is no lateral bending at the ankles and that the gait has ease, firmness and spring.

Good walking is largely a matter of training and should cease to be exceptional enough to attract attention.

Every girl as she passes into womanhood will add much to her happiness, be less prone to neurasthenia and invalidism and more companionable if she can play games well enough to take a hand. Unlike boys, the majority of girls do not take naturally to active sports, and require more teaching. Some are so diffident and so fearful of being thought awkward that they will not attempt to play unless they be expert, and others, if they have not begun early in life, become discouraged by the exploits of their companions, lose patience and will not take the time or trouble to practise. For this reason the love of games should be encouraged and the form of play taught in every girls' school. But here, more indeed than in boys' schools, athletics demand the close oversight of a physician or instructor who has the required medical knowledge to detect physical defects and adapt muscle work to their correction, who knows the organs susceptible to strain and is capable of measuring the effects of exercise

and of deciding when it must be modified or discontinued. In addition, this director should be, in a sense, a coach and be experienced in games in order to teach them properly. Also sufficiently broad-minded to be interested in backward pupils and devote more attention to them than to those who are apt and learn readily.

CHAPTER III

THE DISORDERS OF ADOLESCENCE

The years immediately before and after puberty, while showing a very low death rate, are marked by much poor health and many disorders depending upon the physical and mental changes incident to development. These ailments are minor when compared with the pronounced diseases of the child or adult and are, consequently, often overlooked. During this period the boy or girl is subject to both the diseases of childhood and to those of mature life, but the former—meningitis, the eruptive fevers, bronchial catarrh and acute disorders of the stomach and intestines—occur with less frequency and gravity, and the latter, such as rheumatism and affections of the bones, muscles, nerves and circulatory system become more common, though in type they are simple and present less severe symptoms. Now, too, nutritional processes are markedly influenced by climate, occupation and surroundings; there is much variation in

the resisting power of different parts of the body; many changes depending upon the establishment of the sex functions, and synchronous disturbances of digestion. An array of conditions predisposing to various diseases, of which the most usual are chlorosis, anæmia, hysteria, and chorea. At the onset of any of these there may be an arrest of growth, especially in weight, at a time when it should be rapid, and this occurrence is a valuable warning that considerably antedates characteristic symptoms.

Again, at this age, mental disorders are apt to begin and a condition is often noted in which there is a decided alteration in character and behavior that falls short of insanity but is far from normal and is incompatible with the attainment of full mentality. Aberrations and illusions, when present, are not so complex as when they arise later, and the insanities are more emotional. Further, disorders that are trifling during pubescence may assume serious features afterward and the years of development seem to be the nursery for many chronic and inherited troubles. Now also the robust may become delicate or the reverse.

Many of the minor troubles of adolescents are due to disproportionate development. For instance, if height increases very rapidly and abnormally, "growing pains" are experienced because the muscles fail to keep pace with the bones. The stretching also causes vascular disturbances such as varicose veins in the legs—a quite common condition—and the bones themselves may be curved and twisted. Acromegalia—abnormal development of the bones of the face and extremities, with disease of the thyroid gland—is an exaggerated example of lack of proportion in growth. This disproportion may be due, in part, to some tissues appropriating more than their share of plastic material from the blood, a condition that leads to their more rapid growth and produces deformities, as, for example, lateral asymmetry. Boys, especially, show this tendency and in them equality of arms, legs and shoulders may be wanting for a time to be later regained, as if the growth of the two sides of the body alternated. Unless, also, growth energy is equally divided, each organ or tissue receiving its due proportion, there is danger of unequal growth and of some parts remaining

immature; thus height may be far in excess of weight or the reverse, or the muscles and nerves may be comparatively over- or under-developed.

Considerable blame for the ailments of the young rests upon school authorities, who are too frequently ignorant or careless of health and are so bent on pushing instruction that they force into invalidism or stupidity very many of their pupils, only those who are with difficulty made to work safely weathering these years of trial. The proper plan is to reduce radically school work at this age. The girl or boy should get sufficient sleep each night and have a good appetite and digestion or be kept away from school. Apart from excessive work, the mere fact of attendance in the study room interferes with nutrition, slows growth, favors neurasthenia and tends to arrest the development of the higher powers which should unfold later. Children who study over four or, at most, five hours a day suffer more illness than those who under-study, and this is more noticeable the younger the child as there is less resisting power.

Sleep, by resting and re-building worn-out

nerve cells and by affording an opportunity for the removal of waste material, is a potent health preserver. Children of all ages, while attending school and especially during puberty, seldom get enough sleep, and hours merely passed in bed must never be a measure of the amount of sleep obtained. Young children should sleep twelve hours daily, and the time should not be reduced below ten hours as age advances and studies begin and become harder and require more time. This is particularly essential in pubescent years and holds true until adult maturity, but the unfortunate tendency is to constantly increasing curtailment. Sleeplessness often occurs as a morbid condition and, as such, reaches its highest point at the age of twelve in boys and thirteen in girls and can be controlled by reducing school work and allowing more outdoor freedom and play.

It is a matter of easy observation that in the autumn, when school begins, children are more alert and robust than during the winter, and that in the spring, a month or two before the summer vacation begins, illness increases greatly and at this time school work has the

most decided influence in undermining health. These results depend partly upon seasonal conditions and partly upon the strain of continued study.

Excluding the acute diseases, interesting deductions have been made in connection with chronic conditions such as anæmia, headache, various eye troubles, nasal hemorrhage, loss of appetite, nervousness, curvature of the spine and so on. The frequent occurrence of these affections and their rapid increase in early adolescence is very noticeable.

More than thirteen per cent. of schoolboys have recurring headache and nearly as many are anæmic. From the eighth to the tenth years, illness increases markedly and the increment steadily augments until it is greatest from the twelfth to the fourteenth year and then becomes less and less up to eighteen when there is again more ill-health. The most sickness, therefore, is associated with the beginning of puberty, and when this function is thoroughly established there is a decided and continuous decrease. In regard to growth, or gain in weight and height, the former is far more favorable to health. While weight is

increasing most rapidly there is less proneness to illness and, on the other hand, as this rate decreases disease becomes more prevalent, rising to a second maximum about the twentieth year.

Of girls, in the upper classes socially, from fifty to sixty per cent. are unhealthy to a greater or less degree; of these thirty-six per cent. are anæmic; about the same proportion have constant headache, and ten per cent. have curvature of the spine. Illness is most common during the twelfth and thirteenth years when puberty begins. It then lessens, next remains stationary, to increase again after seventeen when the time of rapid growth is over. If girls who have been ill earlier do not rebound as their weight augments, their condition demands serious attention, and it will often be found that their training is unsuitable in being too much on the same lines as their brothers or that there is something else very wrong in their general management. They should be taught to bear disappointments, to be content and hopeful, to enjoy simple pleasures, and encouraged to assume some of the ordinary light domestic duties of their homes.

They must be saved from great fatigue or exposure, over-excitement or over-study, and allowed only plain, unstimulating food.

Mortality statistics in the young curiously prove that the fewest deaths occur between the ages of ten and fifteen years the interval in which gain in height and weight is very rapid—the years of minimum death rate being twelve for girls and thirteen for boys. Hence, when children are most liable to ill-health there is the least mortality, because throughout this nascent period there is great nutritional activity and vital resistance.

The disorders commonly occurring to adolescents are the following:

Disturbances of Digestion.—These are very frequent in early adolescence because at this period of life there are many systemic changes requiring nutritional readjustment and the digestive organs are still imperfectly matured. At the same time the need for functional activity is urgent since growth is very rapid and requires the perfect digestion of not only a greater quantity but of more complex foods to meet the demands of the different organs for special elements, such

as lime for the bones, iron for the blood, phosphorus for the brain, protein for the muscles, and fat for heat maintenance.

About puberty a normal appetite, or a desire for the sort of food necessary to meet the tissue needs, is often absent or perverted and a tendency arises to experiment with new dishes and to eat strange and sometimes offensive things. Boys challenge, or even force, their fellows to taste or swallow foul and hurtful substances, boast of what they eat and institute eating and drinking contests, the latter often being the initial step in forming the habit of inebriety. Girls affect daintiness, grow fastidious and very particular as to candy or cake or sweet drinks. Very generally the appetite becomes irregular, with abstinence and gluttony alternating, or there may be strange longings, and repulsion for some and extreme desire for other dishes.

These unnatural and perverted tastes may readily pass into fixed bad eating habits, leading to many of the breakdowns of students and causing irritability, anæmia, malnutrition and a condition of weakness in which marked fatigue follows such trifling exertion that proper

exercise is precluded, and in which may arise a craving for stimulants often ending in drunkenness. It is essential, therefore, to establish an appropriate diet during puberty. This is difficult, but quite possible if the faults of appetite are early recognized and personal care and authority exerted; on the other hand, if correction be neglected until after sex development is completed little improvement can be expected.

At this age, too, the wisdom teeth are forming and the lower jaw and the muscles of mastication are growing, features which excite the automatism of biting sticks or finger-nails and encourage the habit of chewing gum, all helping to impair digestion through over-stimulation and waste of the salivary secretions.

Other digestive disorders of adolescents are flatulence, various forms of gastric and intestinal indigestion and constipation.

Cardiac Disturbances.—About the age of puberty the heart normally nearly doubles in size and moderate dilatation is apt to occur, with shortness of breath, palpitation, feeble pulse and general languor. This condition, however, is usually of short duration, as com-

pensation quickly takes place as growth progresses.

In girls, nervous palpitation—mild or severe—often precedes, by a few weeks or longer, the initial menstrual flow, but as a rule disappears when this function is well established. These palpitations are accompanied by loss of appetite, flatulence and other digestive disturbances and by nervous irritability, physical sluggishness and wakefulness. This condition, also, is very common in over-worked students between the ages of fifteen and eighteen. Irregular or rapid and feeble cardiac action attend marked delay or continued irregularity of the menses and depend upon the blood changes occurring in the associated anæmia and chlorosis.

Hypertrophy of the left ventricle with shortness of breath and a sensation of fulness in the cardiac region is frequent in girls of the leisure class who, healthy as to blood and nerves, have grown inordinately just before puberty and are very tall and thin, the heart having to work against increased resistance. This condition is favored by wearing clothing

that fits too closely about the abdomen and lower part of the chest.

Irregularities and alterations of cardiac rhythm are quite frequent in children. They are not serious symptoms, are generally transient, most often noted in anæmic and rapidly growing pubescents, and are due to relative narrowness of the arteries directly increasing tension and sometimes leading to hypertrophy of the heart muscle. Spontaneous irregularities are more common in boys; the pulse may be either too slow or too fast for a time at puberty, and this condition may be constant in sleep, or a fright, an attack of indigestion or the shock of a cold bath may cause it. Sometimes a deep inspiration is attended by the loss of a beat.

During sexual development many become morbidly anxious about their hearts, frequently feel the radial pulsations, and count them, and get into a state of nervous dread that at some moment they may die from cardiac arrest. At night, when the reclining position normally reduces the frequency and force of the pulse beats, this fear may reach a panic pitch until some restless movement, as springing up in

bed, starts the heart into forcible action again. These fears are generally trifling and temporary and are nearly always outgrown in time, but when marked, the subjects often consult medical books; invent excuses for pulse comparison with companions; imagine cardiac pains and sensations of obstructed circulation; avoid exertion so far as possible; adopt some special regimen of their own, and, being seemingly ashamed to proclaim their symptoms, suffer silently until the phase naturally comes to an end.

Spinal Curvature.—Numerous accurate measurements have demonstrated that a want of body symmetry is almost universal in the young, and slight differences must not be taken too seriously. The custom of many schools is to have each pupil measured on entrance and at stated intervals afterward, for the purpose of prescribing exercises and noting improvements, and enough can hardly be said in favor of this plan; still, parents are often greatly alarmed if these records show a little bending of the spine or a trifling difference in the length of the legs, and physical directors err in making their reports too bald

and in failing to state the naturalness of the variations and the readiness with which most of them may be righted by proper physical culture. However, morbid curvature of the spine occurs quite often between the ages of seven and fourteen, and especially in the twelfth and thirteenth years. The bending may be due to ligamentous or muscular relaxation, to asymmetrical muscular development and contraction, or to softening and disease of the vertebræ themselves. It is frequently brought about by prolonged sitting in a cramped position with the trunk resting more upon one buttock than the other; by undue strain from the use of high pillows; constant sleeping in one position; side-saddle riding; a stooping posture in bicycling; careless corset lacing, and occupations requiring cramped positions or the constant use of the same hand or arm. Bad inheritance, surroundings or habits are predisposing influences, and the rapid growth of pubescents, associated with these unfavorable conditions, account for the increase of the deformity at this age.

The onset is very slow and without symptoms other than some slightly abnormal and

often overlooked posture, which is another reason for the careful and repeated measurements above referred to. But as the disease progresses it can be seen that the same leg is always crossed over its fellow; the weight of the body constantly supported upon the right or left foot, instead of on both or alternately; the head uniformly inclined to the same side; one elbow always leaned upon and identical bad positions taken when reading or writing at a desk. Right dorsal and left lumbar are the usual forms of curvature, and the consequent changes in the shape of the chest and abdomen lead to disturbances of circulation, respiration and digestion. In the management of these deformities it must be remembered that, except in very marked instances, corsets or other mechanical supports are better avoided, as these restrict the free movements necessary to preserve muscle tone. Better results are obtained by exercises adapted to strengthen weak muscles.

Abnormalities of Speech.—Stuttering is a spasmodic affection of the muscles involved in speech, in which the act of expelling the breath, the vowel production of the vocal cords

and the consonant forming of the lips and tongue are not co-ordinated; in other words, it is a form of chorea of the muscles of articulation combined with faulty breathing. Stammering, an allied condition, is a defect in pronunciation, and its features are much less severe and explosive. These anomalies occur most frequently between the ages of seven and sixteen years, appearing a little later in boys than in girls, and are imitatively contagious in a high degree. They may be persistent or intermittent, are produced by long-continued and monotonous mental effort at school, by physical over-work in trades, by bad training in speaking and reading aloud and are much increased by diffidence. Both stuttering and stammering can often be prevented or overcome by careful and early speech training and special breathing exercises.

Ocular Disorders.—About the time of puberty weakness of sight with evidences of eye-strain and even retino-choroiditis and hemorrhage are observed, particularly in girls. The latter condition is vicarious and soon disappears after the menstrual flow is regularly established. At this age, also, near-sightedness

begins to be troublesome and requires the aid of glasses.

Chlorosis increases steadily from the eighth to the twentieth years, with the exception of the fifteenth which is the most immune of the interval. Some observers have detected a slight excess of iron in the blood in early puberty, which may be a natural effort to prevent this disease.

Sleep Anomalies.—The hours given to sleeping not only become shorter near puberty but sleep becomes restless for a while, later to grow either distinctly better or much worse. At this time, also, sleep is apt to be irregular, there being periods of days or weeks in which it is sound and prolonged, followed by intervals of wakefulness and disinclination to sleep or even intense dislike to the idea of going to bed. Normal adolescents—boys pre-eminently—are often seized by a desire to wander romantically about in the open at night in search of adventure, a tendency particularly marked when the moon shines and one that is probably a racial reversion to the predatory and amatory pursuits of primitive man. This youthful impulse is not always innocent, some using night

to cover excesses and as an excuse for evil deeds, as if darkness removed the sense of responsibility dominating their actions in the daylight; but when trained and controlled it may be converted into an ability to do good mental work in the evening hours. Dreams now become more emotional; have a greater effect upon the trend of waking thoughts; are often so vivid that the night's sleep instead of refreshing is followed by much weariness, and in them the sexual organs frequently show their psychic influence as well as the first evidences of their full functional activity. Sleep-walking may make its initial appearance at this time, and reveries, day dreaming and trance states—midway between waking and sleeping—are often observed.

Nervous and Mental Disturbances.—Establishment of the sex functions has a powerful influence upon the nervous system generally, and psychoses and neuroses are more common in early adolescence than at any other time of life; then, too, morbid impulses are difficult to control.

The following are some of the conditions worthy of study:

Epilepsy.—This, in the idiopathic form, is an affection in which there is a fixed tendency to spasmodic muscular movements of a special type, attended by unconsciousness, which recur until a convulsive habit is established. The period of greatest liability to the appearance of epilepsy is during the development of puberty, a large proportion of cases occurring between the ages of ten and twenty years; no time of life is exempt, though the probability of its onset lessens after the latter age. More girls are affected than boys before the tenth year. After twenty, nearly four times as many males as females become victims.

Direct heredity is a common factor in this disease, and all inherited nervous disorders predispose to it. Some cases may be traced back to ordinary convulsions taking place in infancy and even in children up to two or three years old, these often mark the beginning of true epilepsy. A paroxysm may be brought on by fright, over-excitement, exposure to the sun and blows or falls on the head; one of the most active exciting factors is putrefactive fermentation of the intestinal contents, combined with intestinal indigestion and chronic constipation.

In gravity, the paroxysms vary greatly from a violent general muscular spasm, with unconsciousness, to the mild *petit mal*, in which there is merely a trifling shudder or a momentary lapse of consciousness.

The marked seizures may take place without warning, but they are usually preceded by premonitory symptoms—the epileptic aura. The aura may be motor, as a local spasm of the hand or face; or sensory, as numbness or tingling or other abnormal feeling in one extremity, which mounts slowly upward until it reaches the head when unconsciousness occurs. Sometimes there is pain in the region of the stomach; nausea; palpitation or giddiness; flashes of light may appear before the eyes, and there may be other subjective sensations of touch, taste, smell and hearing. The fit begins with universal and continued muscular contractions, and uttering a hoarse cry, the sufferer falls to the ground unconscious. After a moment or two, rigidity passes into alternating muscular contractions and relaxations which gradually subside after lasting from several minutes to half an hour. Then consciousness may quickly return, though the patient is

somewhat dazed at first; but more frequently the senses are not regained until after a deep sleep of an hour or more.

Petit mal shows many very diverse features which can only be classed as epileptic by their periodicity. Characteristic loss of consciousness may be absent entirely and at most is only momentary. The subject does not fall, but the head may drop a little; there may be a brief, staring fixation of the eye-balls and a shivering of the body, and nothing more. An aura may or may not precede the trifling seizure. Sometimes after an attack there may be mental confusion and various automatic actions.

Epilepsy has a decided effect upon mentality, all degrees of deterioration being encountered ranging from dulness, apathy, retarded development and uncontrollable temper to melancholia, idiocy and mania. The earlier in life the disease appears the more marked is the mental disturbance. This is due to the greater susceptibility of the actively growing brain tissue to the evil influences of the sudden and violent discharge of nerve force in the paroxysms.

The outlook so far as checking the recurrence of the paroxysms is concerned is very unfavorable. Somewhat more encouraging, perhaps, in the cases which begin under ten years of age than in those between ten and twenty, and in these than in instances of still later origin. The disease in its ordinary form does not directly endanger life, death when it does occur being usually due to some accident, such as an injury to the head in the fall, or by drowning if a fit occurs while bathing.

Hysteria is a condition of brain weariness marked by poor general nutrition, local excess of sensibility or loss of sensibility, anomalous motor features and psychic abnormalities, such as perverse behavior, lack of thought composition, limited consciousness and divided personality.

In young children, though a rare affection, it appears in boys and girls equally, but after the tenth year becomes much more common and the proportion of female sufferers increases. The onset of puberty has a powerful influence in producing hysteria. First, on account of the physical and psychical changes taking place in the organism, and secondly, a few

years later, because important problems relating to a choice of occupation, the necessity of earning a living, the questions of love and religion arise and must be decided. These matters often completely occupy the intellect, still naturally weak, leaving none for other subjects. This thought deficiency, in brains nervously predisposed, may gradually be intensified and specialized until it terminates in hysterical manifestations. Heredity is another frequent etiological factor, the disorder occurring in those who inherit a nervous constitution or whose parents have been insane, hysterical or addicted to drink. Further causes are anæmia, chlorosis or other nutritional troubles; excessive work in school; the acute infectious diseases; any condition leading to nervous irritability and impairment of the general health, and it may be excited by an injury, a fright or by imitation.

The manifestations of this disorder are very numerous and diverse, and it may simulate almost any organic disease of the brain, lungs, digestive organs, bones or joints. However, the ordinary symptoms may be grouped as follows:

Psychic Symptoms.—These include periods of depression of variable duration; alteration in disposition, in which there may be indifference, capriciousness or extreme irritability with paroxysms of causeless laughing or crying; great irascibility; hallucinations; disturbed sleep with complex and romantic dreams or night terrors and somnambulism; an inclination to continued deception about very trifling matters and a tendency to imitate the symptoms of diseases read about or seen in others.

Sensory symptoms are local or general excess or loss of sensibility, the former especially; headache with, at times, tenderness of the scalp; neuralgia; severe pain in the region of the stomach, occasionally attended by vomiting, and, sometimes, temporary assumed blindness and deafness.

Joint symptoms, really sensory in character, are frequent between the ages of ten and fourteen and are very perplexing. They are usually referred to the hip and next often to knee, ankle and spine, and all forms of articular disease may be simulated. There is frequently acute pain which is increased by movement or any attempt to overcome an

associated deformity; excessive sensibility of the affected limb or whole body; tenderness of dorsal spine on pressure; slight or marked deformity that may continue for a long time and is always more decided during examination, and moderate atrophy of the neighboring muscles due to want of use.

Motor and Convulsive Symptoms.—Mild cases present many varieties of maintained or interrupted muscle contractions. There may be local spasm—either constant or intermittent—of eyes, face and lips; wry-neck from contraction of the cervical muscles; disturbed breathing when respiratory muscles become tense; hiccough from involvement of the diaphragm; loss of voice from laryngeal constriction; difficulty in swallowing and regurgitation from spasm of the œsophagus, and eructations and obstinate vomiting—sometimes of blood—when the stomach and abdominal muscles are affected. Hysterical cough is another paroxysmal feature, and it may be so constant and severe that it suggests grave pulmonary trouble, especially when, as occasionally happens, it is attended by bloody expectoration.

The more severe cases may be marked by choreic movements or by attacks of hysterolepsy. The latter is less common than in adults and the character of the convulsive movements differs widely. There are localized sensitive areas upon which pressure produces pain, nervous manifestations and occasionally convulsions; the breathing is rapid and irregular; arching back (*opisthotonos*) of the body is often noted; consciousness is not completely lost, but the patient is dazed and has hallucinations. Hysterical paralysis is another possible occurrence, and though it is not usual in the young, it has been observed as early as the middle of the second year.

Other symptoms are absent or capricious appetite, poor digestion and assimilation; profuse urination or incontinence; alterations in the secretion of the salivary glands and of perspiration; disturbed sleep; anæmia and general malnutrition.

In the management of this disease, preventive measures are most important. When a child inherits an hysterical tendency or is nervous, special attention must be given to developing the muscles, while the nervous

system, on the contrary, is kept as passive as possible. Such a child should lead an outdoor life, in the country preferably; be sent to bed early each evening to secure plenty of sleep; play freely and in this way exercise; eat regularly and plainly, avoiding tea, coffee and all stimulants; live simply without the stress of exciting reading or of theatres or children's parties with their late hours, and educational work must be restricted to a few hours each day and very carefully guarded from over-forcing.

When the disease develops it is essential to remove the subject from the influence of an hysterical parent, that the danger of imitation may be avoided, and remedial measures are most successful when applied outside of the home and under the care of a trained nurse who is trustworthy but not over-sympathetic. In other respects the treatment should be placed in medical hands.

In addition to epilepsy and hysteria there are other nervous conditions—neuroses—all showing a close dependence upon the development of the reproductive organs, seeming to be much influenced by the process of es-

tablishing a mean between over-activity and arrest of the sexual functions. When the proper balance is not struck, many abnormal features appear and there are strange psychic transformations. For instance, mental suffering, loathing or anxiety are expressed, in turn, by localized neuralgia, nausea or cramp-like muscular contractions, and so with numerous other abnormal symptoms common in this unstable period of life. These transferences follow sudden and violent impressions, especially when they affect females and have to do with the sexual realm. They often take the form of hysterical outbursts associated with violent emotional and motor disturbances, and are incited by sub-conscious influences resulting from suppressed recollections of some previous act against which natural delicacy protests and about which there is nerve-wearing remorse. Such cases require full discussion of the distressing experience instead of its repression. This need has suggested the psycho-analytic method of treatment in which the patient is questioned regarding and encouraged to freely talk of the origin of the disturbance, or, if the memory be

at fault, hypnotism is employed until its whole course can be lived over again and told or acted in all its details, the result being relief of tension and restoration of balance and tranquillity. Without this skilfully induced reaction of confession, the cause—usually some sexual shock—is almost uniformly concealed, with the effect of keeping up and magnifying psychic disturbances. The good results of this procedure also point to the importance of guarding pubescents from all nervous shocks, and to the necessity for the young of wise advisers, sufficiently human and sympathetic to encourage complete confidence and confession.

Before taking up the detailed study of the nervous disturbances referred to, it must be understood that there are certain mental processes which are usually and normally established about puberty. These are reverie and abstraction; imagination; self-consciousness and self-examination, the reverse of childish absorption in external objects; assertion of individuality; imitation; tendency to silliness to divert criticism and to be dramatic; bashfulness and a desire for solitude. Such traits

may be greatly exaggerated or modified and may pass beyond control and so become symptomatic in the disorders to be next considered.

Over-conscientiousness and Self-observation.—This phase of abnormal mentality occurs most often about the age of twelve or thirteen, and the subjects, previously normal, become peevish and given to moods; are concerned about their incentives to actions, dreading that they may be bad; make uncertain statements to avoid the risk of falsehood; are troubled about giving deceitful or unintended impressions; are so careful in conversation that they distort details; fear that their childish thoughts are sinful and their acts wicked, and sometimes worry as to whether they have not even injured a passerby they have brushed against in the street, or caused a conflagration with a match they have struck, blown out and thrown away. If there be much sexual unbalance these morbid obsessions are accentuated or changed; there may be a passion for destroying things, or a desire to create astonishment by mischievous acts; skilful distortion of truth to cover misconduct; absence of natural affec-

tion and of a sense of right and wrong. These cases—even the worst—often become quite normal after the sex functions are regularly established.

Anxiety neuroses—exaggerations of the above conditions—are related to neurasthenia and hysteria and are characterized by extreme apprehension of some approaching calamity. The patient—usually a female—suffers from a more or less constant anticipation of loss of self-control, illness or even death; fears the attempt at, or the results of, any action; has the sex organs constantly in mind, and dreads impotence. Physically there are alternating pallor and flushing; sudden perspiration; palpitation of the heart; abdominal discomfort; vertigo, muscular twitching and localized numbness, tingling or other sensory manifestations. This state, besides being due to general emotional disturbances, is also attributable to imperfect sexual hygiene, the fault lying in the direction of over-restraint in the exercise of this function and celibacy. In this way it differs from neurasthenia, which is a product of excess, and both disorders may be largely prevented by a normal sexual life. The various

phobias or fears are further described on page 101.

Educational Incapacity.—Many children, though mentally healthy before, begin to deteriorate at puberty and become difficult to teach. Their power of mental attention and reception decreases; they fail in lessons and, becoming butts for their companions, have their dispositions ruined. Removal from school and careful management for several years alone offer any prospect of restoration.

Confirmed invalidism is a peculiar neurosis encountered in adolescent girls whose reproductive organs are undeveloped or impaired in function. These unfortunates imagine that all their organs are diseased and they drift from specialist to specialist for operation or treatment. They greatly try their physicians and friends by their detailed description of symptoms and their selfishness, their accusations of neglect and unfair treatment, their display of resignation at being misunderstood, and, above all, by their constant demands for sympathy. This condition is often seen in rather advanced students who study not from interest or thirst for information, but merely

to pass class tests, or to demonstrate that the female mind is equal or superior to the male. Sometimes they become proud of their troubles, almost challenge a cure, and are little benefited by medical treatment unless they can be lead to believe that the fact of being restored to health will excite more interest and afford a more wonderful topic of conversation than their symptoms have ever done.

Depression and its reverse state, gaiety, are often accentuated and out of proportion in youth. The former is prone to deepen into melancholy even in those with the merriest temperament, when misfortune is experienced and, especially, when there is a hereditary tendency.

Melancholia is not very common until after maturity, though it begins to appear with some frequency about the thirteenth year. Then its onset is sudden and severe, its type impulsive and passionate, and the prospect of a restoration of mental balance is directly proportionate to the normality of inheritance and previous health. At the same time, features that would be discouraging in later life mean less in the young and are more curable. Youth is easily

depressed to despair and as readily reacts into hopefulness and gaiety, provided the make-up be sound.

Neurasthenia—chronic nervous exhaustion—and **psychasthenia**—mental fatigue—are symptom groups depending upon various causes and arising frequently during adolescence, especially in girls. Their features—abnormal sensations, feelings and psychic attitudes and reactions—are essentially mental and, as disorders, they belong in the neutral field between mental health and actual insanity. While both conditions may herald the beginning of organic disease in some organ only indirectly connected with the central nervous system—a notable example being colitis—their onset depends largely upon abnormality of the sex functions existing synchronously or having been present in early childhood, but they may also be due to other emotional disturbances.

Neurasthenia often begins in the adolescent, to become fully developed later. Its subjects are irritable, very sensitive, have a poor appetite and are constipated. They suffer from headache or a feeling of pressure at the back or top of the head; pain in the back and legs;

insomnia; mental depression with apprehension and exaggeration of trifling disturbances in digestion or circulation, and have their attention fixed upon the genito-urinary organs. Other features are incapacity for mental application, with a disinclination for any muscular effort that is so marked that they are only satisfied when lying in bed in a darkened and perfectly quiet room. There is a disposition, too, to go into long descriptions of symptoms with anyone who will listen and—a much more dangerous one—of resorting to stimulants or narcotics to relieve depression and discomfort, with the frequent formation of drug habits. The nearer puberty the neurasthenic symptoms appear the more they suggest mental instability and the greater the care required to prevent actual and lasting mental impairment.

In the practically closely allied psychasthenic state, patients experience sensations of incompleteness; of unreality; have obsessions; pseudo-hallucinations; abnormal impulses; phenomena of depersonalization, and phobias in great variety. Phobias, or pathological fears, are exemplified in the algias or bodily fears, in fears of objects, of situations, and of ideas.

The phobias of the body involve different parts of the frame, such as the hands feet, head, chest or genital organs. They also have to do with different functions and activities, such as walking, swallowing, breathing, speech, sight, hearing, smell, and so on. The dread of objects includes not only those that are actually dangerous, but extends to very ordinary things, such as dirt, people and animals. Fear of situations extends to both physical conditions—dread of open spaces or crowds; dread of elevated places; dread of confined places—and to social matters, such as dread of mistakes and of looking or acting peculiarly. Phobias of ideas pertain to moral and religious ideas, also to death and to the onset of insanity or to the attack of any disease.

The prevention of these abnormal psychic conditions is more satisfactory than their treatment when established. Certain races, notably Americans, show a marked susceptibility to this form of nerve disorder. But no people, class nor condition is exempt, and heredity is a potent factor in the causation. The latter fact indicates that prevention should begin even before the birth of the individual. In

other words, marriage must be discouraged in all those having inherited neuropathic tendencies, but is permissible when one of the parties to the contract has overcome the disorder in the acquired form, and if there be no nervousness in the family into which he or she enters. If one parent only be neurotic, the children are likely to be healthy.

In the event of a nervous history in one or both parents, preventive measures should be begun for their child very soon after its birth. These include regular hours of feeding; food of proper quality and quantity; suitable clothing; sufficient sleep; abundant fresh air and careful general regimen. Over-anxious mothers do much harm by constant fondling, or by walking with, rocking or nursing their infants every time they cry or show the least restlessness, and by neglecting early to teach regularity and obedience. Infants are easily trained and whether, assuming a normal brain, their habits are to be good or bad depends entirely upon the mother and nurse.

In childhood the same careful regimen is essential. This age, too, being the most impressionable and plastic, is favorable to the

ready establishment of habits, and if bad ones predominate, efforts toward nervous or mental hygiene are greatly hampered. Everyone is familiar with the pampered, selfish, insolent child who rules the household and must have his own way, and who, if he be thwarted, either sulks or bursts into a violent passion. A foolish, nervous mother defends such a child by asserting that it has always been delicate; or that it is ill; or attributes its disposition to inheritance—an excuse for all bad behavior—and maintains that scolding and discipline merely increase the trouble. In reality cases of this type are already in the nervous class, but, being young, it is still quite possible to overcome the symptoms. These children should be handled carefully and in a firm kind manner, be taught obedience, self-restraint, consideration for others and any bad sex habit must be watched for and broken. Care must be taken that they get plenty of rest, sleep, fresh air and regular moderate exercise, with a daily sponge bath of cool or cold water; that the bowels be properly evacuated, and that they eat regularly and simply, coffee, tea and stimulating drinks being forbidden. Excite-

ment, competitive games and over-severe exercise are especially harmful.

To carry out properly the above measures it may be necessary to remove the child from home and family influence, under the care of a carefully chosen governess or an intelligent trained nurse, the selection falling upon one who is kind, firm without harshness, and one who has had some experience in similar cases.

Lessons at school should not begin before the seventh year and under no circumstances should nervous children be forced in their studies. When home conditions are unfavorable educationally, it is best to send the child to a good boarding-school, where regularity, obedience and outdoor exercise take a prominent place in the curriculum.

An *only* child is frequently spoiled and often becomes nervous. Children need, and should have, the educational influences of companions near their own age.

When the preceding preventive measures have been thoroughly carried out, good nerve habits should be sufficiently well formed to carry the individual safely through adolescence. Certain risks, however, accompany the dawn of

sex consciousness, and the passage from childhood to maturity, in either sex, should be carefully supervised. The physical changes of this transition period are marked, and often surprise and shock the uninformed. This is particularly the case in girls who, from false modesty as to sexual matters on their mother's part, have received no instruction about the menstrual function. Those uninitiated are in danger, too, of the occurrence of mysterious and vague ideas and the formation of habits of self-inspection, masturbation and other abnormal practices. On this account all children approaching puberty should be given a brief, plain explanation of sex functions. (See Chapter VI.)

In addition the physical, mental and moral training of adolescents requires close attention. With the nervous, brain work must be moderate and secondary to muscular exercise which, in turn, should be systematic and carefully selected to meet individual needs. Rowing, swimming, games of ball, riding and gymnastics, under an experienced instructor, are useful. When it is thought best to educate away from home, the boarding-school to select

is one in which physical exercise is compulsory, and one situated in the country or in a small town. The latter because, on account of there being fewer distracting influences, master and pupil come into closer and more constant association, and because the principal amusements are the healthy open-air sports. The best modern schools are showing an increasing tendency to shorten the hours of study and increase those of play, making the more moderate athletic games an important part of the student's life. Schools having a drill master and military methods of training are the best for young boys who have not learned, at home, to be obedient, punctual, self-restrained and respectful.

The management of existent neurasthenia and the different phobias and neuroses must be left to the medical expert. Like hysteria, however, they are best treated by removing the patient from home to any suitable place where, in new surroundings, emotional control becomes much easier, and where the daily life can be strictly regulated. Beyond this and proper nursing the requisites are a nutritious diet, rest—but not a complete “rest cure”—

massage, proper bathing and a tonic regimen. Thus the bodily health is established and, gradually, emotional control is brought about by occupation and suggestion and, in appropriate cases, by the employment of psychoanalysis as already explained.

Disturbed Mentality.—The years of sexual evolution—from twelve to twenty or more—are quite prone to mental unbalance bordering upon insanity, and this epoch marks the derangement with special characteristics. The want of balance is influenced by heredity in both sexes, but is more common in females on account of the relative preponderance of the sexual organs, their more rapid developmental changes and the periodicity of their function.

The power of restraint becomes impaired; modesty, generosity, sympathy and natural tenderness give way to self-assertion, selfishness and cruel lack of affection, and there are alternating stages of depression and excitement, bearing some relation to the menstrual periods. The intervals of depression are marked by various phobias; thus the patient dreads being suspected of bad conduct or of evil acts never done; fears that she is being tracked or watched,

and refuses to eat lest she be poisoned; all so real and despiriting to the sufferer that the idea of suicide is suggested. In the opposite state of excitement there are tendencies to foolish jesting, levity in situations of gravity, and altogether excessive hilarity, the distressing fears being entirely forgotten. Further, in this state, there may be restlessness; great irritability; quarrelsomeness with outbursts of violence—very disproportionate to the provocation received—impulsiveness of affection or hatred; suspicions of ill-usage and personal slights, and exaggeration of the trouble attending any undertaking. -

Sometimes the mental bias takes some special, single direction. One girl may develop a passion for wasting. She may order an extravagant dinner, let each course remain untasted, and after it is all served and refused call for and eat a little of some other expensive dish. She may squander her parents' money in dresses which she hardly wears and when she already has plenty; fritter away her own and her servants' time by demanding service which she could perfectly easily perform herself. She may waste many of her own

hours by going to bed in the face of any trouble—no matter how trifling—and after marriage is apt to ruin her husband's disposition and waste his life by unceasing demands and by constant nagging to gratify some new desire.

Another, very contented and loving as a child, experiences a complete reversal of disposition during adolescence, turning against her parents and devotedly attaching herself to some one else; becomes very unhappy and is possessed with the idea that she is being watched and persecuted, and finally throws off all family ties and duties to be independent and support herself. This type of case shows two features that are very common and unfortunately on the increase at present. These are suppression of natural affection with a craving for some unrelated, or even imaginary, older person of the same sex on whom to lavish affection, and a desire to lead what is called "one's own life," duty to family or to society having no place in certain schools of modern thought. Patients like these too often show to the world the best side of their natures and are frequently very charming to strangers, so that their true character is only known in the

homes they have broken up and rendered desolate.

All decided cases of mental unbalance have little power to resist instinctive impulses and mental impressions, and if not carefully managed may drift into grave and established insanity. They require change of environment; judiciously prolonged rest in bed, as their general condition is usually one of exhaustion; careful nourishment; treatment of any physical disorder, and general management which must be kind and firm but free from over-sympathy.

Dementia præcox a prominent form of insanity in the young is due to heredity or to a constitutional predisposition to nervous disturbance, and is characterized by an early deterioration of brain power. It includes the conditions formerly classed as insanity of pubescence; of masturbation; ovarian insanity, and hebephrenia, in which periods of shyness and depression alternate with boasting, self-assertion and delusions in regard, for instance, to property, religion or personality. Also katatonia with its states of insensibility, muscular rigidity, word repetition, imitation and

unconscious actions, and finally stuporous melancholia.

Juvenile paresis is another disorder appearing about puberty or even at a much earlier age.

But it is not in place here to go further into the subject of insanity than to state the important causal factors. These are heredity, especially from the mother's side; too early and difficult brain work; severe over-tax of the emotions; fright; imitation; the development of puberty, and bad sexual habits. Etiologically, too early over, or under, mental training is as bad for the leisure class, as are excessive manual work and imperfect hygiene for the poor. Girls inherit insanity more readily than boys, and as a class are more liable to mental diseases, this is due partly to the pubertal changes being more extended, and partly to the fact that they are more prone to such nutritional defects as anæmia and chlorosis, with attendant systemic weakness and menstrual irregularities.

CHAPTER IV

THE FAULTS AND CRIMINAL TENDENCIES OF ADOLESCENTS

There are abundant records to show that criminal actions, in both boys and girls, greatly increase between the ages of twelve and fifteen years, and that at this time most vicious careers are started. It is well known, too, that the number of juvenile delinquents is constantly growing, and that wrong-doing begins at an increasingly early age; these occurrences depending upon the precocious attainment of maturity, which, in turn, is encouraged by the many forcing conditions of modern life, especially in cities.

Usually conduct is good at the age of eleven years, less so at twelve and thirteen, and worst at fourteen. After this there is improvement until at seventeen, adolescents behave as well as children of eleven, and at eighteen distinctly better.

In the causation of crime the most impor-

tant factors are bad inheritance; ill-health in early years; neglect and desertion by parents; illegitimacy; entire want of homes or corrupt ones; over-crowded, filthy dwellings in which adults and children are huddled together in one room and often sleep in the same bed, and the contaminating environment of slum life with its disregard for decency and law.

As to the nature of the offenses, vagrancy and crimes against property are most common from twelve to fifteen and even up to the twentieth year, and show the difficulty which the young have in adapting themselves to their social surroundings. The restraint of school brings out the nomad instinct, and the passing from the communal condition of family life to industrial strife with its many restrictions develops the natural impulse of self-maintenance and resistance to the laws of property. Crimes against person arise later, from twenty-one to twenty-five, and depend upon undue self-consideration. In more detail, truancy, usually the first violation of established rules, is most common at thirteen; fourteen is the year of incorrigibility, maliciousness and trespass; fifteen for petty larceny and open drunkenness,

and seventeen for sexual crimes. Children under sixteen lack the strength and knowledge to become worse than vagrants or to indulge in more than trifling thefts; nevertheless their faults must be corrected, since they are the first steps toward habitual adult criminality. Crime, unfortunately, tends to increase and intensify as age advances.

Children neither possess the ability to control self nor have they a realization of the necessity of restraint, both coming only with time and experience. If the child be degenerate and belong to the criminal class and live in a bad environment or have brutal instincts more developed than intelligence, there is great danger that this essential power may never be acquired with the resultant yielding to the faults and desires natural to, but repressed by, all normal individuals. Self-control then is the foundation of right living; its culture is the chief aim of family life, of the laws and customs of states and religion, and the most advanced and free communities are those in which it is best and most generally established.

In dealing with youthful delinquents it must be remembered that, so long as there is devel-

opmental progress, it is quite possible to overcome vicious traits and place the individual upon a straight path. Many criminals are capable of leading correct lives and of being successful in honest undertakings; requiring, only, to be properly guided and removed from bad surroundings.

The age of moral responsibility—when the child becomes able to discern the difference between right and wrong—is variable. Most communities set it legally as beginning at ten or twelve and being fully established at sixteen or eighteen years. However, this knowledge when it comes, does not always bring the power to resist lawless acts, and this fact should be taken into account in measuring the punishment of the young. First offenses, especially, being investigated for extenuating conditions and judged temperately. The offenders should be sentenced by special officers in comparatively secret courts. Instead of a prison with its contaminating influences, disgrace and risk of criminal contagion, separate places of detention should be provided by state or private means for reformation and training. Further, and best of all, those not in the in-

corrigible class should be taken from vicious parents or from the streets and placed in selected families where they are subjected to home influences, sent to school, and, in addition, taught to work regularly and systematically, a very important element in their salvation.

Without going deeper into the question of juvenile crime, consideration may be given to certain faults and traits of frequent occurrence in children who are far from being in the criminal group, but which, under favoring circumstances, may lead to occasional or habitual law breaking.

Conduct seems to be considerably affected by atmospheric conditions; more misdemeanors are committed when there is great humidity; when the temperature ranges over 90°F.; when there are decided barometric variations or excessive wind movements, and the state of the weather has a marked influence upon truancy, a fault to which youth is much inclined.

Truancy.—The tendency to this fault increases markedly at puberty. This age craves a free, outdoor life and rebels against school with its restrictions and stilted methods of

instruction, or against colorless and uncomfortable home life, and a desire arises to run away in search of something newer, better and less limited. Again, accustomed surroundings grow tame and monotonous and a wandering life affords a chance of escape and change. Sometimes the truant feels that he must get to and bathe in some shaded water pool, or the spring weather is so fine and warm and the world of nature so beautiful that he cannot endure the confinement of the class room and must be out. This craving shows that disposition and surroundings are not in harmony, and when the bonds are once thoroughly broken there is danger of drifting to settled vagrancy. The truant is often more than ordinarily energetic, requires interesting bodily exercise, and, if properly directed is capable of great usefulness in open-air occupations. Over-repressed he becomes a tramp, and soon a thief as he wanders about irresponsible, uncontrolled and little noticed.

Lying.—Distortion of facts or the telling of deliberate falsehoods are, sadly enough, the usual methods of concealing misconduct and a lie springs naturally to vicious lips, or is soon

adopted to avert suspicion and punishment. All untruths are not equally bad. Children at various times in their early lives—after the fourth or fifth year—begin to imagine and enjoy telling experiences and talking about things that have no real existence. They say that they have seen strange creatures in their walks; pretend that they are horses and dogs, play at house-keeping and at such serious matters as weddings and funerals; or make believe to be some relative or older friend and rehearse their sayings and doings. These pretences, while of course false, are very innocent untruths and have self-deception for their chief pleasure. They show merely the beginning of imagination and should not be crushed but carefully directed, being important elements in certain spheres of mental activity, notably romance and dramatic writing. Sometimes, when uncontrolled, they may lead to morbid imitations and hypocrisy, but more good than bad results from them.

Children often reserve the truth for friends and consider that they are justified in deceiving those they dislike, and in telling lies to help their fellows. They find it difficult to be untruth-

ful with a parent they love or to cheat at school if they admire their teacher; at the same time promises made in hours of intimacy seem less binding and are readily broken when friendship wanes. Such lies show a lack of moral sense and a need of its awakening and cultivation, and while not necessarily bad, may be the beginning of worse and habitual deception.

The chivalrous lie has some of the same childish characteristics. It is used not for any self-benefit but to help another out of some difficulty or to prevent injury to a friend. The object may seem to justify the deception by being seductively noble, as when a falsehood may save a classmate from the disgrace of expulsion from school, but the difficulty is, that, while the individual would not lie to save himself, the initial untruth, however generous, weakens the truth habit and makes meaner lying easier. Nevertheless this form of falsehood may become a question of duty and honor which must be left to the individual conscience.

Childish weakness and timidity encourage concealment to avoid punishment, and lies are ready shields for mischievous or vicious acts and bad habits. These, purely selfish lies are

the most common and demoralizing forms of untruth, are very difficult to overcome and prevail in the criminally inclined.

Lying may also result from a desire to gain an advantage over companions; from imitation; self-interest; rivalry and retaliation, and from indolence.

Some boys, but more especially girls of thirteen or more, together with an extremely selfish, affected disposition, a longing to attract attention and a tendency to pose, are habitual liars and take pleasure in deceit because it gives them a sense of importance measured by the trouble they occasion others. In contrast to these constitutional liars are those who become over-exact and look upon every departure from the literal truth as equally sinful. They avoid the risk of telling a falsehood or of conveying an untruthful impression by a mental or whispered reservation, and are continually depressed by the fear that they may have deceived.

The faculty of truthfulness develops late and with some difficulty. It can be established by striking at the root of each type of lie. It is not favored by modern social usages, such as

the butler's reply "not at home" when the hostess is really within but not willing to receive callers. On the other hand, it is encouraged by precept and example to shun pretence of any kind, to be fearless, and to speak plainly and without exaggeration either as to matter or phrase.

✓ **Anger** in its marked form is a passing insanity, which for the time being hampers rational self-direction and sometimes is responsible for grievous injury to an offending person through the animal instinct of revenge. After the storm there is weakness and relaxation, occasionally nausea, and great remorse, with apologies and resolutions to refrain in the future from giving away to fits of temper.

Anger may flare out without apparent provocation, though it is usually caused by the denial of some strong desire; interference with assumed personal rights or liberties; objectionable commands as to dress or behavior; ridicule; hurts to self-esteem, and other slights and disappointments. Adolescents are more influenced by these various causes than young children, but, when normal, they very soon begin to see the futility and evil of rage and make

great and more or less successful efforts at control. This is particularly true of girls, who with the arrival of puberty seem to develop a remarkable capacity of repression, though they show an unfortunate tendency to substitute harsh and cutting words for violent physical acts.

While youth is both peculiarly sensitive and very susceptible to the causes that excite ill-temper, any undue repression at this age is apt to ruin the general disposition, making it bitter and vindictive. Indignation is bottled up and its expression postponed, and when it explodes finally is more serious in its effects, because of the long-considered toll of reprisal required, as well as the greater knowledge and strength for its taking. It is better, therefore, not to try to eradicate entirely this fault, but rather to turn it toward the mean and bad things of life and bend it to making the individual forceful in the struggle for place in the world and in his opposition to cowardice and all wickedness.

The passionate who have no power of restraint grow worse as age advances and many become criminally dangerous, while the morose

who continually brood over affronts and injuries may nurse their anger to the point of crazy violence. All are benefited by firm, carefully directed management, and made worse by indulgence and by insufficient correction or too ready forgiveness for their conduct during a paroxysm of rage.

Envy and jealousy are faults that preclude true friendship and, when extreme, may lead toward criminal acts. These traits are much more frequently present in growing girls than in boys, are most noticeable in small and poor communities, and it is probable that they are the echoes of instinctive efforts for survival and to obtain for self the choice things of life. It is hard for anyone, particularly the young girl, to acknowledge that companions of the same age are handsomer, more cultivated or more favored in a worldly way, and sometimes base and sly steps are taken to discredit them, or hatred of their success may be expressed by insults and even bodily injury. Further, with the development of puberty competition for the notice and regard of the opposite sex begins and gradually becomes intense. With this rivalry comes jealousy, the coarse fault as well as measure of

physical love. Much may be done to overcome these faults by more home attention and more demonstrative parental affection. Encouraging results, too, can be obtained by pointing out individual good qualities and, so far as truthfully possible, making favorable comparisons with those supposedly more fortunate or successful.

Teasing.—Many boys and some girls who are quite good natured and entirely without hatred take delight in, and cannot resist, annoying younger and weaker companions, and are most pleased when their worrying causes weeping or excites a burst of anger. The methods of teasing differ greatly: it may be doing some one unpleasant thing or applying some one hated epithet; in taking and hiding an article of personal property; in ridiculing dress or mannerisms; in inflicting physical pain; in forcing some action by menace or actual violence, and in general domineering and bullying. The ordinary teaser generally becomes sorry for his victim when his suffering reaches distress and, growing sympathetic, desists. The disposition to tease is difficult to overcome. The tormentor is apt to develop

into a bully and does himself more harm than his victim in whom the persecution frequently brings out valuable qualities of resistance. Something may be accomplished by cultivating the quality of generosity, which few children really lack, and by pointing out the humanity of helping the weak and inferior and of disregarding defects of person or fortune. An appeal to pity will often do much good.

Organization for Law-breaking.—Boys from ten to fifteen years of age show a marked disposition to associate themselves into bands which, under normal conditions, are later perpetuated and perfected in athletic clubs. These groupings may have very innocent objects, as when the young make believe that they are Indians, build forts or play soldiers. On the other hand, in the older and with boys of the streets the aims of the gang may be theft, fighting with sometimes serious results, other forms of crime, and general disorder and defiance of law. It is important to recognize the existence of this instinct of association, and by proper influence give it a healthy direction toward athletic sports and muscular development.

Theft.—Young children in comfortable homes are accustomed to look upon household things as belonging in common to all members of the family. Being dependent, they are brought up to believe that the necessities of life—food, clothes and bed—are free to them, and the same idea is unwisely accentuated at many schools where pupils are allowed to take from one another, with little or no asking, any article they may need or want. It is readily seen, therefore, how outside of home or school the child may take things he fancies without realizing he is doing anything wrong until taught, sometimes by bitter lessons, the sacredness of property rights. Notwithstanding this faulty preliminary training, very few normal and respectable children steal, and those who do, very soon learn to control themselves.

Older children often steal from a spirit of adventure or to tease, as when they rob a neighbor's garden, finding more pleasure from annoying and outwitting the owner and disregarding the "no trespass" sign than in eating the fruit they take.

Still neither these depredations nor the petty pilfering of the younger child should be over-

looked, as either may bring out some latent criminal taint and be the first step in the generation of a stealthy thief, swindler or robber who plans his crimes and steals to gratify selfish desires; who wastes his life in vicious idleness, and heaps up criminality by inducing others to adopt his profession. Once formed, the theft habit is very difficult to eradicate, especially in the case of females, and these are strangely most disposed to steal during the time of the menstrual flow.

Incendiarism.—Very young children are given to lighting matches or throwing things on the flames to see them burn; the same inclination is seen in boys when they run to fires, and all are at heart fire worshippers and delight to sit near and watch a pile of logs burning. Incendiarism is an exaggeration of this instinct. It is a crime of adolescence and originates from various motives. These may be simply a passion for seeing things burn, or for the excitement of the hurrying engines, the working firemen, and the saving of property or life, and often having started a fire the incendiary shows his humanity by calling for help and assisting in extinguishing it. Again the blaze may be

kindled for revenge, gain or jealousy, and in "pyromaniacs" at the instance of imagined commands to destroy.

Intemperance.—The abuse of alcohol in children is not so rare as one would imagine. I have myself seen a case of delirium tremens in a boy of ten years. But inebriety does not usually begin until after the fifteenth year when the boy or girl associates more freely with older men and women and generally has a social origin. Alcohol first stimulates and subsequently stupefies, and the pleasure of intoxication attends the primary effects, namely: a feeling of well-being; freedom from care; a sense of increased mental and physical power; sociability; broadening and deepening of the emotions, or, in a word, general exhilaration. Adolescence, more than any other age, longs for excitement and new sensations; these are produced by alcohol quickly and surely. There is, consequently, great danger of the formation of the drink habit at this time of life, and this is particularly true of students and those who have a bad inheritance in this direction.

It is an unsettled question whether it is

better to accustom the young to see wine constantly upon the home table and to teach them to use it temperately or to forbid it entirely. Both plans have their advocates, but total abstinence seems safer. The young, when healthy, do not require stimulants; on the contrary, the ageing often do, and if use of alcohol be begun only when needed by general physical deterioration—after middle life—the result would be the making of very few drunkards.

Prostitution.—It is unnecessary here to go further into this subject than to counsel the parents of pubescent girls to encourage in them modesty, self-respect and the natural sense of shame which are the chief fortifications of virtue. Also to prevent their reading immoral books and looking at indecent pictures or actions; to give them some suitable instruction in sexual matters; to secure them the privacy of separate sleeping rooms; to be sure of the purity of attendant servants, and reasonably to supervise the character of, as well as the relations with, male companions. In the mixed play of children, even in the quite young, it is always well to be watchful, as one pervert is

capable of working wide and lasting moral damage.

Suicide.—Self-destruction may occur in early childhood but is more common about the beginning of puberty, though still much less so than in adult and middle life. It is a crime of greater frequency in males—except in the interval from the fifteenth to the twentieth years, when the suicidal impulse is more marked in females—chiefly on account of the greater and wider changes accompanying sex development. Motives for the act may be obvious or apparently entirely wanting. Young children who kill themselves usually do so because they wish to grieve those who, while loving them deeply, have, nevertheless, wounded their feelings, a method of getting revenge for offenses or supposedly unjust punishment which they are too feeble physically to get in any other way. They have no proper conception of either life or death and think, and often say, that if they die, the injuring person, whom they often really love themselves, will be sorry. The affront may be very trifling, as a reproof or a request denied, and the deed may be done suddenly and without premeditation.

Such motives sometimes prevail to a later age and are more common in girls than in boys.

About the time of leaving school, particularly where education has been over-ambitious, disappointed expectations, a feeling of or proved unfitness to fill some high position aimed at, a disinclination to settle down to ordinary wage-earning occupations and the drudgery and sameness of a working life, so different from academic dreams, become, in the weak, powerful inducements to end the struggle. This disillusion and uncertainty is very general with adolescents in schools and colleges, but, fortunately, the attendant depression is soon overcome in the active and healthy. The morbid minority alone reaching the depths of melancholia and final suicide.

Later, and far less frequent motives, are mortification for rejected love and jealousy. Such feelings are often intense as the sexes approach adult age, but threats to end life in consequence, though frequently made are rarely executed.

Imitation is another inducement which is often active, so much so that prohibition of the publication of the details of suicides has been advocated in order to avoid the risk of sugges-

tion, and it is well never to discuss this subject in the hearing of children.

Of predisposing causes, mental disorders are prominent, and while often unrecognized—for they are difficult to detect in children—certainly increase susceptibility to the influence of the different motives. For the toiling class a city life with its too rapid and unnatural development, poverty, hard treatment, scarcity of food, unhealthy and depressing surroundings and child labor are favoring factors; just as in the foolish rich are too great ease and luxury, and too much indulgence in exciting pastimes which overshadow and destroy pleasure in simple things and produce selfishness and premature weariness of living. In the mentally morbid, school life with its intellectual forcing, monotony, fear and uncertainty as to the results of examinations and dread of punishment in case of failure may sometimes be predisposing conditions.

Children often do not realize the true meaning of death and have beautiful fancies in connection with a future life. They frequently think of how they would feel or appear when dead and may plan suicide or go so far

as to test hanging or some other lethal method to experience the sensations of approaching death. These thoughts are most intense shortly after puberty and disappear later, and, although general enough to be almost normal, may in the morbid or mentally disordered end in self-destruction. They also accentuate the importance of avoiding precocity. A child should lead a normal, childish life and not assume the cares, vanities or pleasures of adults and so tax undeveloped powers.

Parents can do much to minimize predispositions and to remove the incentives to suicide by watchful care and study of their children, and by making sure that their lives are normal mentally and physically. In every home there should be the "Children's Hour." Not the stiff tea time with strangers present, when children are taught to make their courtesies and recite verses, but a relaxed free hour giving them an opportunity of confiding to a sympathetic parent any trouble or experience. Too many children, left alone with nurses whose nerves frequently become overwrought, are deprived of this hour because of the mother's social and the father's business

engagements, and are thoughtlessly sent with pent-up longings or unanswered questions to their darkened rooms to bed.

The school, too, should protect the young from worries, mortifications and excessive ambition, otherwise it may do much harm.

Improvidence.—After the fifteenth or sixteenth year boys are apt to show irresponsibility to parents and evince a great longing for an independent life, and with few exceptions are very improvident. If a wage earner, he disregards or never thinks that a less prosperous time may be in store for him and spends all his pay in dress, amusements or dissipation, at a time when he should be thrifty and lay the foundation for future ease and comfort. With well-to-do boys, both at home and at school, money comes so easily for necessities and pleasures that they rarely learn its value, become progressively wasteful, demand more and more and still run into debt, and never realize that a day of scarcity may come. Of course parents are responsible for this state of affairs, partly through carelessness and partly by their natural inclination to gratify the often very innocent desires of their children, only to

feel later regret for their indulgence. A boy should be provided with all essentials and, when the parents can afford it, given a moderate allowance to cover the costs of athletics and amusements. If he find this insufficient to procure everything he wishes, he must never be allowed to run a charge account but should deny himself in some ways and keep his money to pay cash for the things he most wants. Beyond the regular allowance nothing should be given except as a reward for a task well done or for especially good conduct.

Boarding-schools dealing with boys from twelve or thirteen upward have an unusual opportunity for rudimentary financial training, which they generally seem to neglect. To suggest a plan: First, each boy should have deposited with the school a sufficient sum of money to cover, for the term or year, his athletic requirements, balls, racquets, sweaters and so on. Secondly, cash payments must be the fixed rule. When he buys, the boy, having been provided with a book of checks and stubs, draws a regular check against his deposit for the price of the selected article, enters the amount on the stub and subtracts from the

deposit sum, presents his check in payment for his purchase and receives a receipt. When the totals of the amounts drawn are equal to the original deposit he must stop buying unless, of course, his account be replenished from the home source. A small monthly allowance of pocket money for current use should be given in addition to and separate from this checking fund. Such a method would teach the meaning of a bank account, the nature of a check and how to write one, and the necessity of a receipt. It would also be a training in cash payment—a matter of very great importance—and in economy, for should he purchase for the pleasure of spending there is soon no money left and he must do without. Again, next to actual payment in coin, it would give an idea of the value of money and, conversely of materials as measured by dollars and cents and teach care for things which now come so easily that their heedless and extravagant loss causes only a little inconvenience but no real regret. This arrangement might necessitate an addition to the school staff, and the consequent expense and trouble are the excuses given for not adopting it, but the increased outlay would

be a trifle in comparison with the good results that might be confidently expected. As it is now, boys leave school and college with the vaguest notions of business, sometimes even unable to properly write a check, leaving behind a mass of bills, almost believing that to "charge" a thing is to pay for it, and woefully extravagant and careless in money matters and unable to account for the expenditure of a worse than wasted allowance.

While on this subject there is another school fault, already intimated, which is in great need of reformation as it is both hard on the pupils and a direct destroyer of thrift; namely, the encouragement of borrowing—without insisting upon returning—clothing and other personal belongings. This habit once formed is very difficult to break, and may be so continuous that the boy when he reaches manhood has no conception of property rights and becomes a nuisance to his friends who grow tired of lending and losing. It is very well to encourage generosity, but in this instance the quality belongs rather to the parents who supply, than to the boys who lend what they value little, it being so easy to ask at home and obtain more.

Parents and teachers are in a marked degree responsible for the faults of children. To correct them the child's conscience must be roused to action by judicious scolding, when required, and with such punishments as the withholding of something urgently longed for. At the same time good conduct must be recognized and rewarded. A sense of justice should be cultivated, even in play, to the exclusion of selfish desires and interests; together with benevolence, a wish to do good and give pleasure to others and, more than all, truthfulness. The recognition of property rights and of the value of money has been already referred to, but it may be added that the evils of "charging to the home account" cannot be too early taught and the rule established of never purchasing unless there be money in hand to pay. Teachers can do much by insisting on systematic work, while they see that tasks are neither excessive nor monotonous. They must understand that one immoral pupil will surely and quickly lower the general standard of a school and they must be watchful—and see to it—that any such contaminating influence is promptly removed.

CHAPTER V

MENSTRUATION

The menstrual flow is the result of a periodical preparation of the cavity of the womb for the reception and retention of an impregnated ovum. In it both the uterus and ovaries take part, the former—especially its lining membrane—being subject to marked congestion which, in the absence of impregnation, culminates in an outflow of blood from the vessels into the uterine cavity from whence it finds its way to the exterior. Normally the process is repeated every twenty-eight days. Of this period there are four days of congestion of the uterine mucosa, four days of menstrual flow, seven days of reconstruction of the lining membrane, and twelve days of rest. A great part of every woman's reproductive life is, therefore, occupied in menstruating. All her acts, opinions and even criminal tendencies must be estimated by their time association with it, and, so long as the function continues, it is often

difficult for her to successfully fulfill duties and obligations requiring constant application.

Just before the flow begins the body temperature rises slightly, the frequency of the pulse and arterial pressure increase, and all diminish after it is over. Coincidentally the thyroid gland enlarges; the mammary glands become swollen and tender; the lower eye-lids and the nipple areolæ darken; a pungent personal odor is developed; the voice changes in quality and grows less resonant; the nervous system is more impressionable; there is greater tendency to jealousy and ill-temper; marked lassitude and mental inertia; depressed spirits and discontent. There may also be fugitive pains; impaired appetite and disturbed sleep; nausea; sick-headache; palpitation of the heart; over-sensitive skin areas, and local chills and flushings. These manifestations disappear as the flow subsides, and when it is ended the woman feels as if re-created, is full of the delight of living, energetic with a feeling of endless capability, and at the very apex of her capacity and attractiveness. All of these features are not present in every case, and some few individuals show only minor indications that they

are passing through the catamenia and would be unconscious of it themselves were it not for the bloody discharge.

Menstrual periods are similar to the blossoming and ripening of fruit in the vegetable kingdom and to certain generative processes in animals, each of which is looked upon with complacency. But from the remote past to the present this analogy has been disregarded and, following the ancient views that women are unclean at this time and that the monthly discharges serve the purpose of periodically clearing the body of some contaminating substance, the menses have come to be matters of shame, concealment and repulsion to the opposite sex. Woman's acceptance of this general verdict inclines them to hide their condition, sometimes by methods that are detrimental to sexual health. Such concealment, in the nature of things so often repeated, has, in addition to its hygienic side, an influence in lessening honesty and openness of disposition and in producing a habit of dissimulation. Nevertheless, the prejudice is not altogether unfortunate, as it suggests retirement and seclusion which give an opportunity for the rest

that is needed and should be taken during the monthly sickness.

The menstrual flow makes its first appearance either as a mere feature of general development, gradually and without special symptoms and at once becoming regular in its periodicity or, on the contrary, is preceded by nervous manifestations, feverishness, pain and leukorrheal discharge, and is repeated at irregular intervals of two, three or more months to slowly become thoroughly and normally established after a year or longer. In the United States girls begin to menstruate at about the age of thirteen or fourteen, being a year or more in advance of European races from whom they descend. The climate of the different parts of this country, parentage and social position seem to exert little influence and there is no very great individual variation, although blond, large and physically lax girls mature before brunettes and those who may be strong. This precocity in Americans seems to be independent of external conditions, and is probably due to more general and broader mental cultivation and greater nervous strain.

The first menstruation frequently comes to

the uninstructed girl as a shock. In her ignorance she is surprised and frightened by the hemorrhage, thinks that she has been injured in some way and may try to staunch the bleeding by cold applications. After it, her whole disposition changes. She gives up childish plays; becomes more modest and quiet; inclined to solitude and meditation; grows more imaginative; has alternating high and low spirits; pays greater attention to dress and personal appearance; begins to be attracted by men but is shy and reserved in their presence; is more sensitive, and is concerned and thoughtful about the important systemic changes that are taking place. Often, too, there are ill-defined symptoms hinting at mental or physical diseases, though these usually disappear, and a healthy balance is established when exercise and rest are duly proportioned to meet the associated general weakness.

The effect of the initial menstruation upon the nervous system is much more marked than later ones, after the function is regularly established, although each succeeding period has its influence. With the former the disturbances are often violent, even to hysteria or

mental unbalance, and this continues when the periods, as they are apt to do in the beginning, occur so irregularly as once in several months to a year or more. In these instances, after the first flow such premonitory symptoms as headache, weeping, lassitude and malaise are prone to return with the passing of each month irrespective of any discharge.

Should the girl be constitutionally nervous, the precedent features are intensified. At the beginning of the first flow any decided impression may bring about an attack of hysteria, and if from any cause the process be arrested all the ordinary attendant symptoms are exaggerated. The girl becomes terror stricken, fancies she has some dangerous disease, and has such hysterical manifestations as prolonged causeless crying or laughing and globus hystericus. She may have "fainting fits," epileptiform in character, in which she falls with a cry, has slight muscular spasms, set eyes and a quick pulse. These seizures last only a short time, are not followed by sleep and after them the health may be as usual until the next period. Again, on account of intimate sympathy between the brain and the sex organs,

disturbances of the mind, sexual excitement, melancholia, delusions and impulses to violence may result from menstrual arrest or excess, and, like bleeding from the nose or stomach, may appear vicariously, or in the place of and at the time the flow should occur.

Naturally with the entirely unprepared the nervous phenomena are most marked, and this is the case also when organic diseases—cardiac, pulmonary or other—are present. Conversely, the appearance of the function may be followed by improvement in certain pre-existing nerve conditions—chorea and some forms of mental morbidity, for instance.

When one considers that the menstrual process involves all the organs of generation, uterus, ovaries and Fallopian tubes being greatly congested, the thyroid gland and breasts swollen, and a quantity of liquid or clotted venous blood discharged, it is no wonder that the first experience is a severe shock to an unexpectant girl and that it may start a train of nervous symptoms, to be repeated at each succeeding period. Consequently, it is imperative that every girl approaching puberty should be prepared for what she must expect

and be assured of the absolute normality of the occurrence. Further, if possible, she should be supported through the initial trial by her mother or some judicious and sympathetic older friend.

Even knowing what is to happen, the girl still needs guidance after the event. For four or more days of each month during her sexual life she will be subject to the hemorrhage with its attendant depression, lassitude and susceptibility to bodily and mental strain, and she must adopt a proper regimen, part of which she can be taught but much she must learn for herself.

First of all, any sense of shame connected with the function must be overcome. Rather should it be regarded as something to be revered and important, warranting a few days' seclusion every four weeks, at least until regularity is established. During her first period the girl must rest in bed until the hemorrhage is completely over. Subsequently, at least three days should be passed in bed, and two to four more idling about her room, dressed but most of the time flat on a lounge. Her food should be simple, non-stimulating, vegetables freely,

little meat and plenty of cool water. Regular action of the bowels must be maintained and for this purpose mild salines may be used if necessary. If there be pelvic pain, it may be relieved by hot applications externally, but never by the administration of anodynes without professional sanction. With the bodily, there must be mental rest with freedom from anxiety and worry, and while mildly interesting reading, fancy work or other unfatiguing occupation may be allowed, the mind must not be taxed by exciting novels or intricate hand work. Should the occurrence of the period interfere with an excursion, dance or other active amusement, no amount of persuasion on the girl's part should abridge the days of complete rest and, above all, nothing should ever be done to unduly arrest the course of the discharge.

Between the periods, throughout the first year or two, the diet should be substantial and plain, with restrictions as to tea, coffee, stimulants, pastry and sweets. The bowels must be carefully watched to secure regularity of action. Exercise must be moderate but systematic and taken as much as possible in the open air.

Sleep should be regular and long and in a well-ventilated, separate apartment. Tight corsets and long, heavy skirts and boots with high heels must be avoided, and the clothing must be light, warm and comfortable. A ban, too, should be placed on late entertainments and over-study—as to which, as a rule, teachers are poor judges—exciting plays or reading, and the more violent of the sports that belong essentially to boys.

Later in life, when the periods are regularly established, the young woman, if thoughtful, learns by experience the importance of the function to her health, as well as many details of regimen applicable to her own case, and can be trusted to reasonably look after her own welfare.

Finally, all who have the care of girls must remember that menstruation must be regularly and in every way normally performed to insure perfect health of body and mind.

CHAPTER VI

SEXUAL ENLIGHTENMENT

Almost every author who has undertaken this subject begins with an apology for plain writing. This should become less and less necessary with the growing recognition that sexual matters are not inherently unclean and only become so through false modesty or mistreatment by the vulgar. Nevertheless, the subject is difficult to speak of, and still more to write about, in such a manner that the facts may be stated boldly enough to be of value and yet to impart no shock. There should be no more embarrassment experienced than when one describes the symptoms of many diseases or the physiology of digestion, and there will not be, when knowledge becomes more general and when those who are trying to help can be sure that the spirit of their work is understood.

Whether, during the period of pubertal development, children should be given instruction in matters relating to the sex functions

and procreation, or, in other words, sexual hygiene, is a question that can have but one answer. The subject is so important to their future physical and mental health, as well as to their influence upon home and companions, that it is quite undesirable to trust to instinct, or to a chance informant or to answering ambiguously childish questions as they arise. On the contrary, deliberate and sufficiently full instruction should be given to fit children at varying ages to deal, properly, for themselves and for their associates, with the sexual events that naturally come to all.

Regarding the matter to be taught, it must be understood that sexual life has an objective and a subjective side. The objective includes the normal processes involved in reproduction, the explanation of which necessarily involves description of the origin, the development and birth of the offspring, and its subsequent nourishment at the mother's breast. The subjective matters are the relations between the sex acts and the individual; effects, good and bad, of the sexual impulse and the dangers of bad sexual habits and excesses. Preparatory teaching should be concerned only with the

objective aspects and the subjective taken up later.

There are various reasons why sexual enlightenment is advisable. As a matter of useful general information a child should not be allowed to grow up in ignorance of the objective points. At school something is learned from lessons in Botany and Biology of the reproductive processes as they occur in plants and animals, but class-room instruction relative to the human organs should be given only to advanced pupils, as it is much safer for the young to receive information about these individually and at home.

A knowledge of the subjective phases is even more important. On the score of health, unexaggerated warnings must be given of the dangers of certain sexual habits. In the case of a boy especially, a plain statement should be made of the ill-effects, both upon himself and his future wife and children, of the diseases commonly resulting from illegitimate sex relations. Concerning menstruation and involuntary sexual orgasms, occurrences which—though perfectly normal at puberty—are prone to arouse curiosity and cause great anxiety, every matur-

ing child should be informed. Failure to do this is not alone cruel but may lead to serious nervous conditions. It is easy to picture the mental disturbance of a totally unprepared girl when she is surprised by the monthly hemorrhage, or of a boy, under similar circumstances, when he has his first nocturnal emission.

For truth's sake, the frequent questions of children as to the origin of babies must not be too long answered by the stork fable or other ambiguity, lest the child, learning the facts from accidental sources and often in coarse and morally dangerous language, should come to distrust its parents, having been patently and purposely deceived. It is quite as easy and much more truthful to say that a baby grows within its mother just as an apple grows upon a tree, and to call attention to the beauty of the thought that she has the care of it from the beginning. Later the process of reproduction may be more fully explained—for illustration—by the statement that as the pollen of a male blossom is wafted by the wind or carried by a bee to unite with the female element in another bloom and originate

the fruit, so, though more directly, the germinal cells of man and woman meet to create a new human life which, in a provided nest within the mother, slowly develops into a baby and comes into the world after an appointed period. This outline, of course, is merely suggestive, and as the child becomes older further and more accurate details are demanded and short selected readings in anatomy and physiology can be often safely recommended.

Finally no argument need be made for the prudence of informing girls of the ostracism that may be uniformly expected to follow illegitimate sexual intercourse and impregnation out of wedlock. Proper instruction will unquestionably often go a long way in defending chastity, but the teaching must not consist merely in giving advice, it must be general and so communicated that the facts become, as it were, an intimate part of the girl's being. Somewhat analogous, too, is the information that should be imparted equally to young men and women in relation to proper sexual behavior and what is to be expected after marriage.

The time for enlightenment is by no means fixed. The process of pubertal development

commences early in life and is very prolonged, and indications of its beginning often appear long before the ordinarily accepted evidences of nubility. These indications are, in the main, psychosexual in character and may arise as early as the fifth year, though they are more usual at the age of eight or ten. They are displayed in the ardent love which the little boy or girl shows for some one of the same or opposite sex, either of about equal age or, more frequently, somewhat older. Sometimes one may observe marked alteration in mood, from joyousness and vivacity to sadness and depression, depending upon the presence or absence of the object of affection, and now, also, the attraction of beauty and charm begin to be reciprocal. Manifestations of this nature may be entirely unconnected with excitation of the peripheral sexual organs and their significance is unrecognized on the part of the child, though they, nevertheless, show the earliest stirrings of the sexual impulse and indicate the necessity of beginning sexual education.

Once started, the activity of this impulse becomes more and more apparent as age

advances, the increase being sometimes uniform and gradual but often irregular and with varying accentuation of two factors, each supplying features sufficiently marked to establish the need of additional instruction from time to time. There are first—those already mentioned as of early occurrence—the psychological evidences of the subtle attraction of the female for the male and the reverse, with a desire for intimate bodily and mental approximation to the beloved. Secondly, and usually of later development, physical processes connected with the peripheral sexual organs, tending to the reduction of active congestive conditions. However, during the period of gradual progression toward puberty it is essential to guard against magnifying trifling manifestations and attributing every developmental change to sexuality. There can be little worse in parents than a sexual obsession, which classes every exhibition of natural affection, every fancy or innocent kiss to passion and make of these a source of injurious nagging and of active suggestion to their child.

The age, therefore, for commencing enlightenment must be established by intelligent and

reserved observations of each child to determine the beginning of sexual feelings and thoughts. Sometimes it may be inaugurated almost with the first puerile question on the subject. But, to give some guide, the biology and physiology of reproduction may be outlined early, at from seven to eight years for instance. Preparation for the occurrence of menstruation and spontaneous emissions, with cautions against pervert habits should be given at about thirteen or fourteen, and a description of the dangers of venereal diseases and of seduction and prostitution at the age of eighteen. Generally girls require instruction at a somewhat earlier age than boys, and, naturally, irrespective of years more details may be given to some children than to others, though the question of how much to tell and the way of telling must always be decided by the tact and judgment of the instructor. The adherence to any set formula is often worse than no teaching whatever.

The source of enlightenment may next be considered, and here it must be realized that the one object is to anticipate by clean and serious instruction—either at school or in the

home—the casual knowledge that children acquire in a manner which is generally superficial and coarse if not actually obscene. A school-master may appropriately originate sexual education by explaining to a class of pupils of seven or eight years old and of the same sex, the biological processes of plants and the lower animals with the aid of illustrations and as a part of a natural science course. Further, a school physician, may, with advantage separately warn boys and girls of sixteen or eighteen, when they are about to leave school, of the dangers of illegitimate sexual relations. On the other hand, explanatory lectures upon the subjective processes of sexual life for younger children—twelve or thirteen—should not be undertaken at school because the teachings then require close study of the individual and the gaining of his or her absolute confidence; two obligations that cannot be met in school on account of the numbers involved and the time devoted to other subjects. Teachers, too, must always labor under the disadvantage of having to create occasions, whereas one who thoroughly knows a child and is its confidant, finds the easiest and best oppor-

tunities for instruction in *answering questions* or explaining occurrences as they naturally arise.

Those who undertake this branch of education should have, in addition to intelligence and a knowledge of sex matters, the ability to elucidate these matters at the right moment and in the right way. They should know to what extent a particular child's rather broadly extended and ill-defined affections have specialized—that is, how far its amatory thoughts and feelings are aroused by some one person—and also to what degree its special organs have undergone characteristic development.

The psychosexual features and growth conditions are best appreciated and explained by the mother, provided she take her position seriously, and next by the father, especially for boys advancing in age, and then by an older near relation, confidential friend or physician. In other words, most of sexual education should be done at home. The chosen one of these mentors must already have, or must win, the entire trust of the child to secure its fearless frankness, to do away with false shame and to insure its receiving, as true, the

statements that may be made, instead of thinking that it is being put off by evasive phrases which, by the way, even young children readily analyze and accept at their real value. In this connection, too, a child's word should be taken so far as possible, since any unwarranted disbelief or an accusation of lying are sure bars to further trust and confidences.

Advice as to the language to be used cannot be given as each case requires separate study and management, but the right and simple words will come to one who has a delicate discrimination, who loves children, and has a real interest in their welfare. Given a good opportunity, care, tact, consideration of the capacity for understanding and a method that appeals to the intelligence, there can be no doubt that a sufficiently full description of all natural processes can be accomplished without harming morals, rousing a sense of shame, or giving the idea that sexual subjects are in any way unclean. When the proper person cannot be found, efforts at enlightenment do more harm than good and it is better to let the child pick up the usual gross knowledge of the school or streets.

After this general consideration the facts to be made clear may be taken up in more detail, as follows:

Protoplasm the biological element that—under proper conditions—develops into organic life is strikingly represented in the reproductive germs of the human male and female, while in the sexual organs producing them, vitality exhibits its greatest activity and carries out its fundamental purpose, which is the continuance of the race. The sex organs insure the necessary conjunction of the male and female germs with much more certainty than occurs, for example, with the pollen of fruit-blossoms or flowers.

The peripheral sexual organs vary considerably, though perfectly normally, as to size and proportion, and this diversity is particularly marked in boys, and in them is often the cause of much anxiety and dread of deformity or future impotence. When the organs are so far developed that they are able to perform their functions, the boy or girl has reached the age of puberty. This stage in development is usually attained about the fourteenth year in the former and the thirteenth in the latter,

though exceptionally it may be earlier or much later, and as already stated, is preceded by a long period of preparatory changes.

The establishment of puberty is commonly, and may be for convenience, dated from the cracking of the voice and the first seminal emission in boys; the enlargement of the breasts and the initial menstrual flow in girls. But it is important for the educator to understand that the capacity for reproduction—true puberty—is not necessarily acquired coincidentally with these events. On the contrary, spermatozoids, the essential fecund elements in the male may not be secreted for some time after the primary involuntary discharge, and menstruation may occur months before the commencement of ovulation. Further, while these manifestations do not always mark the completion of pubertal development, neither do they indicate the beginning of sexual life, for, as mentioned above, characteristic features, mainly psychosexual, are apparent as early as the seventh or eighth years of age.

At puberty the external virile organ rapidly increases in size and sensibility, and the con-

trolling nerve centres, in the pelvic sympathetic plexus, become more irritable. The testicles grow markedly and reach the lowest point in their descent from the abdominal cavity into the scrotum or containing sac. Their degree of pendency, though, depends upon the tonicity of the scrotal muscle wall, which in turn, is closely connected with the condition of the nervous system, general debility and over-fatigue causing relaxation. The fibres of this muscle tissue readily contract under the influence of external stimulation, and at puberty the area of surface over which this "scrotal reflex" can be excited is much widened. Now, also, certain involuntary motor waves take place in the wall, which, like intestinal peristalsis, propel the testicular secretions toward provided reservoirs. The importance of recognizing the normality of the last three features will be seen later in discussing certain anxiety conditions in adolescent boys, and the same may be said of the abnormal but transitory swelling of the scrotal veins—*varicocele*—that is quite common when the testicles have attained their growth, and is due to the upright

position and the drag of the glands causing venous stasis and distension.

All these structural changes are of secondary moment to the one essential quality of nubility, that is, production of spermatozooids by the testes and their ejaculation with the semen which is a composite liquid made up of the secretions not only of the testicles but of the prostate and other accessory glands. As this fluid begins to be secreted and to accumulate in the receiving pouches there comes a time, usually during sleep, when it is naturally expelled by the ejaculating muscles. Though perfectly normal, this first involuntary sexual orgasm is always a new and strange experience, and with its associated psychical and physical phenomena is quite sufficient to alarm any sensitive youth who has not been prepared for the event. Subsequently emissions recur, with varying frequency in different individuals, though generally at intervals of about two weeks. Their usual time of occurrence is in the deep sleep of early morning when, perhaps, the warmth of the bed or a distended bladder stimulates the nerve centres. Normally they take place spontaneously and are attended by

dreams that rehearse the psychosexual tendencies of daily life and continue until wakefulness comes with ejaculation and its acute sensations. After them, in health, there is a feeling of relaxation and relief, and later, up to the time of the next crisis, a sense of increasing vigor and vitality. Conversely, in the case of sickness, over-work or loss of sleep they are followed by temporary fatigue and occur at longer intervals.

In the female the genitalia are mostly within the pelvic cavity. At puberty they rapidly increase in bulk, their blood supply augments and the controlling nerve centres grow more susceptible to stimulation. At the same time the breasts which are in close sympathy with them, and which up to the seventh year are little different from the same glands in boys, begin to enlarge. These features, however, are of little value in establishing the full development of puberty without the appearance of the menstrual flow. This may be generally accepted as marking the beginning of ovulation, a periodical spontaneous process involving the emergence of the ovum—or female reproductive cell—from the ovary, and its passage

through the Fallopian canal to the cavity of the uterus, where if impregnated it is retained, but otherwise is expelled with the monthly discharges. (See Chapter V.)

Certain parts of the genital organs of the female like those of the opposite sex are subject to erectile congestion and many mature girls experience involuntary sexual orgasms. These with their attending ejaculations have no direct connection with ovulation and the liquid discharged is an indifferent glandular secretion containing no vitalizing elements. Otherwise they are very like the orgasms of males.

Besides the above features both sexes in youth show quite distinctive secondary sex characters that are the beginnings of the marked differentiations between adult man and woman. These are supposed to depend upon special internal secretions produced in the testicles and ovaries which are entirely independent of the vivifying cells, and unlike them are not excreted but are absorbed directly into the blood and play a part in sexual development. Secondary qualities appear earlier in girls than in boys, though during the first seven years of life, outside of the genital organs

themselves, there is little difference in the make-up of the two sexes. After this, in girls, the lower half of the body, receiving an increased deposition of fat, commences to assume the typical rounded form of womanhood, and soon the pelvis and hips grow broader. Next, the neck becomes fuller with lines running smoothly into that of the lower jaw; the hair grows longer and finer and usually in limited areas on the body, and the act of breathing is superior costal, or performed more by movements of the chest wall than of the diaphragm and abdominal muscles.

Psychical secondary characters are shown by a girl's fondness for plays that imitate the pursuits which will occupy her future life. She mothers her doll and plays at housekeeping; cooks at a toy stove; is interested in clothes and articles of adornment, and is careful about the neatness of her person. Of purely mental processes her ideas of form—squares or triangles—are better than of objects—plants or animals; her memory is good from ten to fourteen but poor before and after; her knowledge and recognition of colors is uniformly better than that in boys; she is not so good an ob-

server, is apt to be inaccurate in describing occurrences, and swayed by selfish interests is more given to exaggeration and falsehood.

Boys, perhaps, retain childish characteristics longer, yet some years before puberty the shoulders become broader; the muscles larger and stronger and, on account of scanty fat accumulation, the figure is angular with narrow hips; thin neck; prominent larynx and apparently over-large joints. Later the voice breaks and the beard begins to appear. The respiratory movements are abdominal in type. Psychological characters are seen in the preference for rough games and outdoor sports calling for muscular activity and strength; in a tendency to untidiness; carelessness in dress, and in love of adventure and physical contest. Some mental distinctions have been already mentioned and in addition boys learn less quickly but more surely than girls; are less shy and vindictive though more actively teasing and cruel in their dealings with each other; have a greater sense of honor and are more truthful.

Results of the removal of the testicles and ovaries tend to uphold the internal secretion theory of the production of secondary sexual

characters. Castration besides causing impotence, markedly changes the male character making it either resentful and suspicious, or, as in animals, more docile. Physically it influences development, narrowing the pelvis and chest and making the bones of the extremities long, slender and structurally weak; checks the growth of hair on the face and body; increases the subcutaneous fat accumulation, and prevents the usual break in the voice, keeping it a permanent soprano. Removal of the ovaries stops menstruation and causes atrophy of the breasts; an angular, spare form; a growth of beard; a low-pitched masculine voice and a character showing many virile traits. Both operations, therefore, interfere with the appearance of the secondary characters, causing the male to be more like the female or the reverse and the effects are proportionate to the date of removal; being most marked if performed early in life before the production of spermatozoids or ova, to which these characters were formerly attributed; less if done later, and little or none at all if postponed until after the reproductive cells begin to be formed.

The impulse to the sexual act implanted in

all from the commencement of life, appears in childhood and becomes more urgent as puberty approaches and though designed for the important purpose of race continuation—and to be conserved for this end—is nevertheless too frequently misused with the formation of habits morally degrading and dangerous to health. The most prevalent of these is self-abuse, which when indulged in continuously becomes one of the most selfish and repulsive of vices. Consequently it should receive the careful attention of all who are responsible for the management and sexual education of the young. These should handle the subject discretely, avoiding, on the one hand, false-modest reticence and assumed ignorance of the conduct of children in this respect, and on the other the creating of undue anxiety and nervousness by exaggerating consequences.

The act of self-abuse, masturbation or autoeroticism is accomplished in various ways and much ingenuity may be exercised to intensify sensation and to avoid detection. The practice has always been very universal, so much so that in boys the question is not of the number who have yielded to temptation with greater

or less frequency, but of how many have never succumbed. Among girls it is much less general, though, after forming the habit, they are very disposed to frequent repetitions and excesses.

Just as a child a few months old will be attracted by and scratch an itching spot, so very early in life the first act of auto-erotism may result simply from an impulse to relieve indefinite sensations and without any sexual consciousness or any aim at obtaining voluptuous feelings. The latter motive comes afterward when the boy or girl has learned by accident or seduction how these may be produced. It is well known, too, that such irritants as a full bladder; the presence of parasites in the rectum; a narrowed urinary orifice; local inflammatory conditions and skin eruptions, often determine a flow of blood to the male organ even during early infancy and produce these indefinite sensations. With girl children similar sensations are experienced and the same results follow. It is also a sad fact that the act has been known to be directly taught either to keep a child quiet or to gratify the attendants perverted longings.

In older children, auto-erotism is generally

originated by seduction, though it may begin spontaneously through some innocent movement causing friction of the parts. Sometimes, in the very sanguine, puberty begins with such pruriency that the least accidental excitation produces a crisis and the practice starts before the still undeveloped will power is sufficiently strong for resistance. As the time of maturity approaches, the process ceases to be so purely mechanical, and originates in, or becomes associated with, mental images of sexual character.

After learning the act, its practice is so seductive that there is great danger of repetition at increasingly short intervals until a habit is formed. This, though, is not always the case for there are many who, after a brief and occasional indulgence, lack the impulse to continue or have enough strength of will to resist further temptation. The habit may be established in infancy, when it is more common in girls than in boys, but the danger of its formation increases as childhood advances, and is greatest during early puberty. Once acquired it is difficult to overcome and may be carried to great excess particularly in those

who are full-blooded or have a nervous temperament.

Without further consideration of the causation of habitual auto-erotism in infancy, the practice as it occurs in older children merits careful attention. The conditions producing the initial act have been mentioned, but there are numerous and various additional factors underlying its continuance. The predisposing influences are of two classes: First, those that favor congestion and stimulation of the genital organs, as local itching eruptions on the skin; hemorrhoids; rectal parasites; chronic constipation; the onset of the menstrual flow; physical indolence; confinement to bed or chair in any protracted convalescence, and over-study and forcing at school with the necessarily lessened muscular activity, insufficiency of open-air recreations and long sittings over books or desk. Secondly, those that encourage weakness and irritability of the nervous system and interfere with the development of control power, as relaxing over-indulgence; want of interest in normal activities and games and sports; idleness and solitude. Heredity and inherent feebleness of will also play a

part, and the habit is often associated with hysteria, epilepsy and tuberculosis, the last appearing to hasten maturity and the functional activity of the reproductive organs.

Indirect exciting conditions are season, especially Spring; local uncleanness; deferred rising from bed after the night's rest is finished; undue fondling, and the wearing of corsets sufficiently tight to cause congestion of the pelvic region. Direct excitants of the act are a crossed-leg position while sitting; the use of rocking chairs or a hobby horse; punishment by spanking; sleeping in feather beds; locally close-fitting clothing, and trousers with side pockets, often over-filled and much too convenient for the hands, and horse-back or bicycle riding on improperly constructed saddles. Still more active causes are reading of improper books and the sight of lewd pictures, and, most dangerous of all, the conversation and exhibitions of bad companions.

While certainly many of these factors are not effective in the healthy and well environed, the feeble and nervous may respond to any or all of them. Still, notwithstanding the susceptibility and the known prevalence of the

practice, it is a great mistake to assume lightly the existence of the habit. Detection is merely a matter of observation in infants, and is quite simple in children up to about the eighth year as they imperfectly conceal their impulses. The act itself is attended by stimulating manipulations or movements of special character and rhythm; breathing is disturbed; the eyes become bright and moist; the face flushes, may be beaded with perspiration and has a characteristic expression. At its end there is quiet and relaxation. The observation of these manifestations, of course, leaves no doubt as to what has occurred, but without them and in older children, who accomplish the act as secretly as possible and in whom there is not yet an ejaculation to stain the under-clothing and bed linen, the detection is much more difficult. Such signs as dark lines under the eyes, pallor, congestion of the whites of the eyes, reddening of the parts in girls, and many other popularly held indications are quite as valueless in proving impurity as diligence and apparently correct conduct in school and at church are in accurately indicating purity. To avoid un-

fortunate consequences in the way of strained relations and broken trust, absolutely no accusation should be made until the child has been caught in the act, or until a confession is secured by the mother or some older confidant. The latter is a strong argument for instruction, for when children are uneducated sexually and never hear sex matters properly discussed, or are led to look upon them as obscene, they soon learn personal reserve and are wanting in the frankness that is encouraged by confidence in some friendly adviser. Consequently they rarely make confessions on this subject, though they should do so as easily and naturally as on any other.

Auto-erotism is very generally and justly considered to be an essentially selfish and immoral habit, being inimical to race perpetuation and the home-making interdependence of the sexes. Undoubtedly, too, the very ease of the act, its tendency to frequent repetition and the necessity for constantly increasing the intensity of the mental and peripheral excitants make the vice dangerous to the health of boys particularly and, in a less degree, of girls. When practised before seminal

secretion is established, if long continued and unrestricted, if the crisis be artificially postponed and if there be an inherited predisposition to nervous disorders, the physical effects are general depression and languor; the mental, diminished power of attention, poor memory and dulness. When begun and carried to excess after puberty the consequences are general neurasthenia, sexual perversions and gradually increasing inability to respond to normal sexual stimuli, ending sometimes in impotence. In addition to being often established early in life before nerve poise is acquired and its exercise being possible without limitation, the habit further taxes the system, because the orgasm is unnaturally concentrated in both duration and parts involved and the crisis is spasmodic and nerve exhausting. Its abnormality implies great excitation, which in the main is innate and lacking in the usual slow approach of normal intercourse. In the latter, the special senses—sight, touch, hearing—and various physical and psychical accessory attributes take part. The confirmed autoerotist, on the contrary, mentally creates some erotic picture and makes imagination assume

the functions of the higher faculties, until fancy becomes more potent than reality, a condition illustrated by *mental masturbators*, a not uncommon class of perverts.

The results, however, are neither so direct nor serious as formerly believed, and so greatly exaggerated in a certain class of publications advertising wonderful nostrums and made accessible to the young for commercial purposes. There is no actual slow deterioration of the intelligence, insanity and idiocy are not usual effects, and there are no characteristic changes of facial expression nor of bodily posture branding the habitual indulger. But general belief in and dread of such results produce the timidity, diffidence and seclusiveness so frequently shown by the victims of the habit and cause many of the nervous symptoms they present. Consciousness, also, of a degrading and universally censured weakness leads to loss of self-respect and arouses a sense of pollution, and for very shame the practice must be hidden. So they grow secretive, morbidly self-conscious, take little pleasure in life and, becoming mentally depressed, may gradually drift into melancholia. Moreover, a desire to be

chaste and efforts at purity are met by strong carnal temptations, and the struggle is very disturbing and wasteful of the nerve energy that should be utilized in study, healthy play and general development. Most of the injury to health, then, is due not to the habit itself but to the anxiety and fear that comes with the knowledge of its assumed direct results, and it is this dread that the responsible educator must anticipate and allay.

Excluding this element and its effects, it is difficult to detect any deviations from health in those who practise auto-erotism occasionally, even if they continue it a long time, neither does this degree of indulgence impair future marital potency. On the other hand, in those who abandon themselves to temptation various abnormal features do appear, some of which are direct, being due to the influence of the habit in restraining physical and mental development; others indirect, depending upon the taxing fear, and these combined furnish a fairly distinct group of symptoms, some of which have just been mentioned.

The act itself is accompanied by a rise of a degree or more in body temperature which is

sustained for about half an hour. With its fall a sense of weariness and depression is experienced and the skin grows cool and moist. If indulgence be habitual and unrestrained the general symptoms show both physical and mental depreciation, such as loss of muscle tone; a feeble, slow-acting heart and sluggish circulation; cool, moist hands and facial pallor; disturbed digestion; headache; over-sensitiveness to light; poor memory and decreased power of attention; morbid agitation and hypochondriasis, and stomach and other neuroses. Coincidentally the personal character is subject to change, becoming sensitive, untruthful and timid, and there may be increasing self-conceit with want of sympathy for others and lack of ambition, of perseverance and of self-control. Compared with the intense excitement of each orgasm, normal companionship, simple amusements and ordinary occupations seem unattractively colorless, and the healthy pleasure that should be taken in them gives way to inaction and indifference, always a suspicious state in adolescents. Senile infirmities with impotence and sterility come over-early in exceptionally grave cases, and

any child generated before these changes occur is prone to exhibit the consequences of parental sin by infantilism or prematurity. Fortunately such fathers and mothers beget few children, and the latter are rarely able to accomplish maternal feeding to prolong the life of a degenerate offspring.

Epilepsy and insanity, formerly attributed to the habit, do not result from it unless there be an inherited predisposition, and even so, the causal factor is probably the morbid unrest and terror produced by misleading information, rather than to the practice itself, however unbridled.

Some consideration has been given already to the fact that irregularities in the form, size and functions of the sexual organs, the occurrence of transient varicocele and the scrotal waves may cause boys to imagine that they are abnormal and, in consequence, to become very apprehensive. This tendency is greatest in auto-erotists, since they are already depressed in mind and very sensitive and have their attention more than ordinarily concentrated upon these parts. Any change or variation from a supposed standard is considered either a de-

formity or, in their distressed consciences, a direct result of indulgence, and they grow hypochondriacal and regard their condition as hopeless. Yet more alarming are the spontaneous seminal emissions; these are made more frequent by the habit and suggest loss of virility. As to the practice itself they feel that voluntary abandonment is always possible, but the nocturnal losses are beyond control, and between dread of a recurrence and despair when it happens the nervous system is greatly disturbed and life may be so embittered that release is sought in suicide.

This state perhaps more than any other in adolescence demands tactful management, and a guardian must forestall the trouble as well as give counsel when questioned. Most boys are so modest about these matters and so ashamed of the habit that they hide their fears and symptoms from those able to give good advice and consult equally ignorant companions of their own age or read the purposely alarming literature on the subject that is too often put in their way. They crave special instruction to remedy their ills and to remove anxiety as quickly as possible, and they are

very tractable here, though they may be quite the reverse generally. They need education in sex details, in the laws of reproduction and the proper course to follow to insure sexual health.

They should be told that spontaneous expulsions of seminal fluid, while not uniform as to frequency, are absolutely normal; that if absent there would be real cause for concern and that anxiety about and close attention to the special organs make them more frequent. In addition, an expert's examination helps greatly by proving the non-existence of imagined abnormalities. The thoughts should be diverted from self to active outside interests, and the will braced to resist the besetting temptation by explaining the importance of chastity to health and happiness. In all talks with boys it is well to remember that, ordinarily, they are much less influenced by the moral aspect of this question than by appeals to manly pride with descriptions of the indecency and degrading selfishness of the habit.

Further, the educator must use nice discrimination to strike the safe mean between

minimizing and exaggerating the dangers of auto-erotism and constantly keep in mind that, as already indicated, it is not so much the habit as the auto-suggestive fears of its effects that underlie any consequent disturbance. When, as often happens, each indulgence is attended by a marked sense of having sinned, or intense remorse for self-inflicted permanent injury, strict moralizing and the detailing of possible sequels, even without overstatement, have very disastrous psychic effects. The right way is to draw the mind out of its morbid condition by diversion and avoid any subject that will further depress.

It is in just these cases that the widely distributed pamphlets exploiting patent medicines do so much harm. These distort natural conditions and unimportant variations into features of disease, loss of power or vital decay. In them the timorous find all their own symptoms and many others never thought of, but are promised a rapid cure from some prescription or from the use of some expensive apparatus. Sometimes the treatment is harmless and, occasionally, it may do good by suggestion, though usually, if not actually in-

jurious, it has no beneficial action whatever and the deluded victim grows more and more discouraged and may have a serious nervous breakdown unless rescued by a wise and timely adviser.

The regular medical treatment, except in the use of tonics to maintain strength and the bromides to relieve irritability, is unsatisfactory. Surgically, circumcision is advisable in selected cases. The operation being followed by induration of the exposed part greatly reduces local excitability. It also facilitates cleanliness; diminishes the liability to reflex disturbances, and consequently steadies the sexual function and lessens the inclination to any form of excess.

Much more can be accomplished by hygienic measures which, it may be stated, are quite similar to those called for as aids in general sexual education, irrespective of the habit of auto-erotism, and to a great extent are concerned with the removal of the exciting causes of the act.

Living and sleeping rooms should be well ventilated and never over-heated. Each child should have his or her own bed and, if possible,

a separate bed-room not far removed from the watchful eyes of the mother or other really responsible person. The mattress should be firm and the bed coverings as light as consistent with warmth, and while deep and long sleep is desirable, prompt rising at a reasonable time in the morning is to be insisted upon. If wakefulness comes before the appointed time the warm bed must be abandoned at once. At this hour, also, the caretaker must be particularly attentive to the child's hand and body movements. Some children like to have a few favorite toys placed by their bed-sides at night, and it is well to grant this desire, as it is much better for them to have these to play with, when their sleep is done and if they cannot be bathed and dressed at once, than to lie awake with nothing to do. Confinement to bed as a punishment and the general boarding-school rule requiring each pupil to rise in the morning at a fixed hour when a bell rings are very dangerous. For the latter the time usually set is about seven o'clock, and those who may be thoroughly awake before readily fall into bad practices.

The general clothing must only be thick

enough to protect, without keeping the body too hot. Knickerbockers and trousers must fit loosely about the lower part of the trunk and be held up by a belt rather than drawn up tight in the crotch by braces; the drawers in girls as well as boys should have the same easy fit. Trousers pockets, if allowed at all, must be placed well to the sides and stitched backward.

Daily bathing in cool water is advisable. The bath should be conducted in private and be short, though always including proper attention to the cleansing of the special organs. Swimming, with its added exercise and amusement is especially useful, and the application of cold water to the surface by hip baths and local spongings with no after-drying is of material aid in the relief of some of the sequels of the habit.

The diet should be plain. Of the three meals the last must be the lightest and any desire to eat between times ought to be discouraged. Though meat, asparagus and celery need not be forbidden, as they are not excitants of the sexual impulse as popularly supposed, a ban is to be placed on tea, coffee, alcoholic liquids,

cigarettes, highly seasoned dishes and too free indulgence in sweets.

Exhausting physical and mental work is to be avoided, though exercise up to the point of healthy fatigue is a safeguard and the same may be said of any interesting occupation that encourages companionship and employs the mind in idle moments to the exclusion of solitary and purposeless dreaming. The best exercises for the body are out-of-door games and sports that involve a spirit of contest and the discipline of "team" play. The best occupations for the mind, those that not only give employment but educate the senses, involve some earnestness of effort, and are directed to the accomplishment of a satisfactory end. For horse-back and bicycle riding a saddle with a flat peak should be provided; in the gymnasium pole and rope climbing—where the hands and legs are used conjointly—had better be dispensed with and there are objections to the rocking-horse and rocking-chair in the nursery.

All local causes of irritation, as skin eruptions, accumulation of secretions, or a long foreskin with a contracted opening require attention, and care must be taken to clear the rectum

of seat-worms and to be sure that it does not become impacted with masses of hardened feces.

Before leaving this subject there is one method of breaking the habit which merits mention. It is chiefly applicable to the very young or to those who accomplish the act during sleep, and consists in careful watching of the child throughout the night by a trained nurse who must take the hands from beneath the bed coverings whenever they are approached to the parts and check any suspicious movements of the legs or body. This observation is usually necessary for several weeks and must not be relaxed until some time after all suspicious actions have ceased. It has proved very successful in my own experience.¹

There are a few more educational points to be considered in connection with the avoidance or the lessening of certain dangerous influences that arise during the development of sexual life. Some of these are inherent and hereditary

¹ Dr. Albert Moll, "The Sexual Life of the Child," 1913, states that this plan "appears to be almost entirely unknown," but it has been employed quite generally in this country for a number of years.

and will remain beyond control until eugenics is established as a practical science. Others depend upon environment and may be modified, though they are far from being quite under restraint. The sexual impulse, for instance, is excited by many and constantly operating conditions, such as association of the two sexes, or even of many of the same sex together; direct example; improper books and pictures—not to mention the daily newspaper—and the sight of sexual acts between animals. Such excitants cannot be entirely precluded, but they can be modified in force and frequency by insisting upon modesty and good example in the home; good companions; the occupation of separate bed-rooms and other reasonable safeguards.

Shame and *disgust* are important sentiments to cultivate as assistants in sexual education. These feelings arise from the breaking of a custom or a breach of morality and are closely related to one another. Thus an action may be disgusting to an observer and a source of shame to the actor should he be conscious of observation. In cultivating these sentiments the educator must beware of giving custom and

morality a mistaken application, lest shame and disgust become exaggerated and either inhibit improperly or lose their restraining value. A child should be taught that to expose the genital organs is both uncustomary and immoral, yet at this same time, let it be taken for granted that there is nothing wrong in nakedness itself, and that sexuality under certain conditions, as in the marital act that gives origin to a new life, is customary and moral while illegitimate intercourse, auto-erotism and depraved practices and thoughts are grossly unclean and proper objects of shame and disgust.

The more marked the sexual impulse the greater the care indicated to divert attention from it by encouraging participation in athletic sports; employing the mind with entertaining reading and refined theatrical plays. At the same time developing the will power to increase restraint and resistance to temptation. Here, also, help can be expected from religious instruction, though it must be in true and heartfelt piety, not in empty formalities and dogmas.

In conclusion, too much must not be expected

of sexual enlightenment. It has its most noticeable effects in the prevention of disease, but it cannot rapidly secure purity for the young and check the prevalence of bad habits. If, however, only a few children be saved a good beginning will have been made and steadily progressive results can be reasonably looked for with the education of successive generations.

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